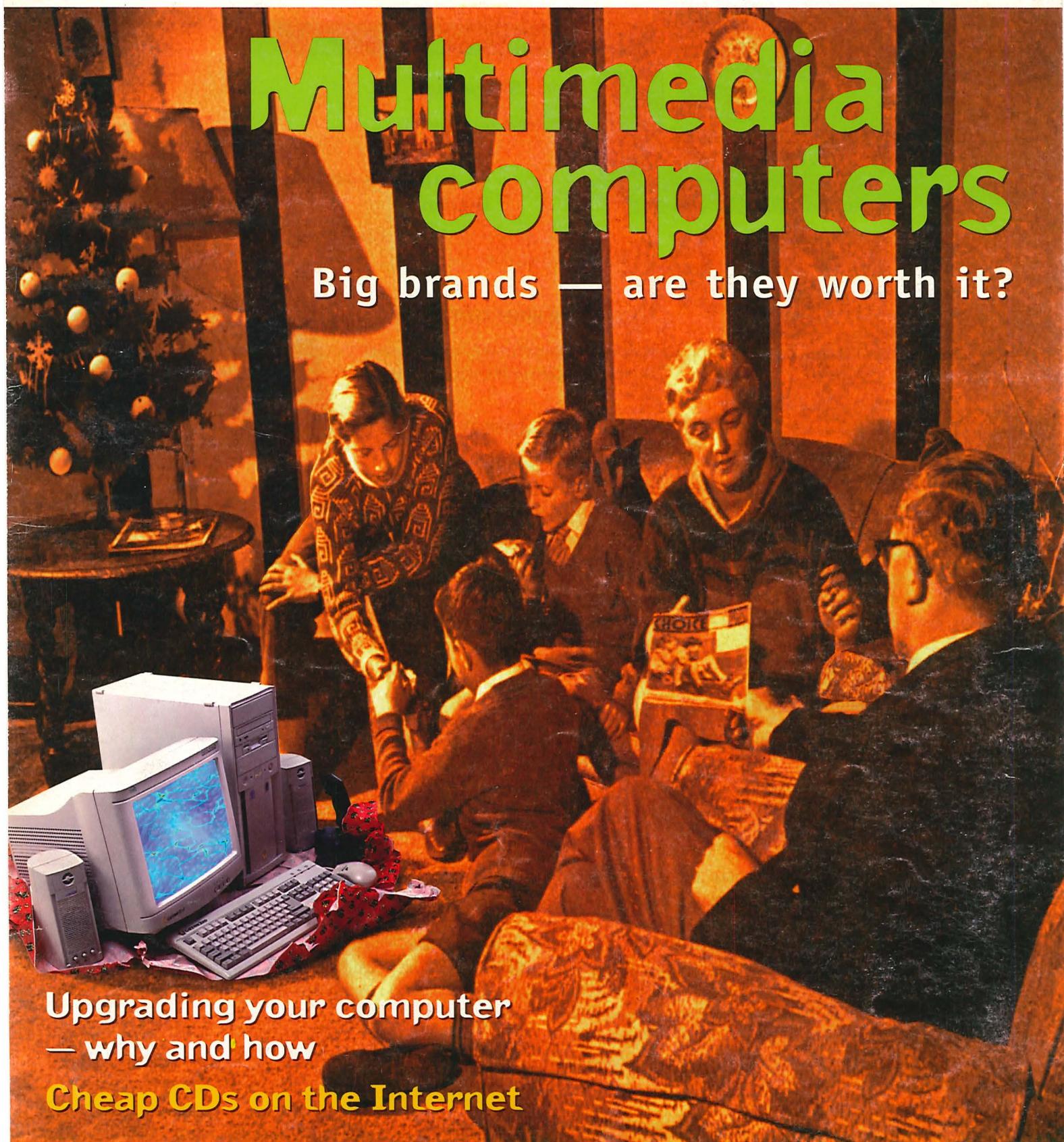


# computer

CHOICE

## Multimedia computers

Big brands — are they worth it?



Upgrading your computer  
— why and how

Cheap CDs on the Internet

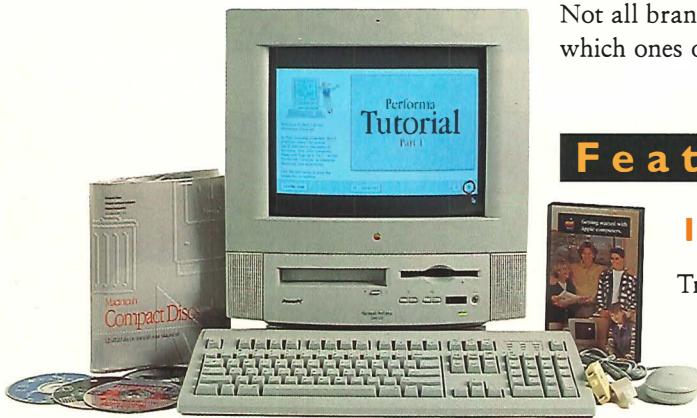
Plus! Games consoles • computer monitors • shareware

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Not all brand-name computers are equal. Find out which ones offer the best value.

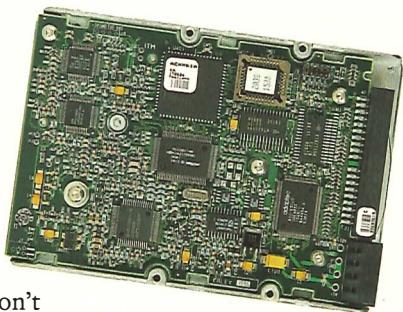


▲  
**Brand-name computers are easy to set up, but do they offer good value? To find out, turn to page 6.**

**ABOUT OUR COVER:** If you're a long-time CHOICE subscriber, this issue's cover image may seem familiar. It was originally used on the June 1992 cover of CHOICE. Our artist added the computer and Christmas tree electronically.

### 20 Upgrading your computer

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Bigger is not necessarily better.

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**Should you upgrade your computer or simply replace it? Page 20.**

## Editorial

### The great Mac scandal

A number of Macintosh users rang and wrote to us after reading the first issue of Computer CHOICE. They were concerned that the magazine concentrated too much on PCs (IBM-compatibles).

Our intention is to include the Mac whenever it's appropriate. For anyone about to buy a computer, the Mac is an important option worth thinking about. It's certainly a viable choice for most computer tasks.

Many articles in Computer CHOICE are not computer-specific – for example Bits + Pieces and Cheap CDs on the Net apply to all types of computer. In other articles, when they're relevant to Macs, we refer to them – there's a Mac in our test of brand-name multimedia computers on page 6, for example.

### Who's behind Computer CHOICE?

Computer CHOICE is published by the Australian Consumers' Association, an organisation set up more than 35 years ago to fight for consumers' rights.

The Australian Consumers' Association is a non-profit and non-party-political organisation. To ensure total independence and objectivity, we buy all the products we test.

We don't accept advertising from the computer industry or anyone else. Our income comes from the sale of Computer CHOICE, CHOICE and our other publications and some fee-for-service testing, so we're completely independent.

John Pospisil, Editor

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## 29 Interface

Reader survey and feedback; missing software; monitor sizes.

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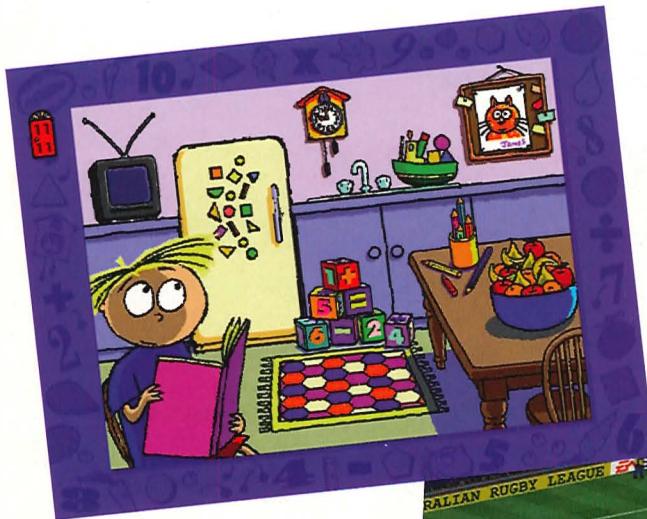
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VOL. 1 NO. 2 SUMMER 1996

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## A NOTE ON THE USE OF PC

Even though PC stands for personal computer, the computer industry commonly uses it in reference to IBM-compatible computers — the standard adopted around 15 years ago. For this reason, any reference to PC in Computer CHOICE means an 'IBM-compatible' computer, as opposed to an Apple Macintosh or some other type of computer. See *Technobabble* on page 31 for more information.

You wanted  
to know

New trends and ideas explained.

#### The Network

##### Computer (NC):

A low-cost computer designed primarily for use with networks, including the Internet. The NC concept is backed by a number of large computer companies, including Apple, IBM, Oracle, Netscape

Communications and Sun Microsystems. The main difference between conventional personal computers and NCs is that personal computers are self-contained, while NCs need to be connected to a network (a number of computers linked together) to operate properly.

**JAVA** The main limitation of the Internet's World Wide Web is that it can only present information in predefined formats — mostly text, pictures and simple animations. JAVA is a computer language designed to extend the capabilities of the Web. If your Web software understands JAVA (like the latest versions of Microsoft Internet Explorer and Netscape Navigator), it can actually download JAVA programs (also called JAVA 'applets') to your computer from the Internet, and run them, just as you might run a word processing program stored on your computer's hard disk.

# Software that disappoints

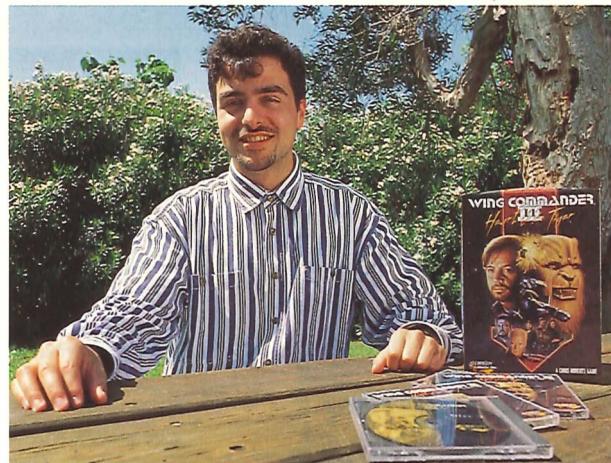
Simon M from Sydney didn't think he'd have any problems with *Hi-Octane* — a computer game he bought after he saw it advertised on television. After all, his computer (100 MHz 486 DX CPU, 8 Mb RAM and a quad-speed CD-ROM drive) exceeded the specifications listed on the box (66 MHz 486 or Pentium CPU, 8 Mb RAM and double-speed CD-ROM drive).

However, when he actually tried it, the game ran very slowly in its best graphics mode. When he tried a faster, but lower-quality graphics mode, he was disappointed by the blocky images.

The store where he had bought the game eventually allowed him to swap it for another, but it took him some time to convince the shop assistant and store manager he really was disappointed with the performance of the game, and hadn't just changed his mind.

According to Electronic Arts, the company that distributes *Hi-Octane*, a computer with the minimum specifications will run the game — but to run the game properly, you'll need a computer with the 'preferred' or 'recommended' specifications. The company says games come with low-quality graphics modes so that people with older, slower computers won't feel alienated.

If a game, or any software for that matter, is claimed to be suitable for your system, but then will only run properly if you upgrade or reconfigure, we consider that you should be entitled to a refund —



Simon was much happier with his replacement game

just as you would be if you bought any product which did not perform to a standard you're reasonably entitled to expect.

Before buying software, we recommend you take the following steps to avoid disappointment:

- Read the label carefully. Rely on the 'recommended' or 'preferred' specifications, rather than the minimum, as a guide to whether it will work well on your computer.
- Ask the retailer whether the software will run comfortably on your computer. That way you don't have to rely only on the packaging.
- Check with the retailer that you will be able to return the product if it doesn't work satisfactorily on your computer.
- Ask for a demonstration on a computer that is comparable to your computer at home — though this may not always be possible if you have an older computer.

## Why is it so?

Want to try a little experiment? Type the following calculation into your computer's built-in calculator or spreadsheet:

**30.9-23.2-7.7**

If you've done the sum in your head you'd know the answer is zero, but chances are your computer is displaying something like - 8.88178E-16 — which is a very small number but it's not zero. Other similar calculations also result in this error.

This occurs with a number of different programs, on PCs as well as Macs.

A CHOICE journalist noticed the phenomenon while using Microsoft Excel, and called Microsoft's product support line. Interestingly, he was told it was a fault with his particular computer and that he would have to pay to have it fixed.

Later, when Computer CHOICE checked the helpline again, we were told that computers don't see numbers the same way as humans do. The error occurs when the computer converts ordinary numbers into its own binary number system, which consists only of zeros and ones (250 is 11111010).

There are ways of working around this quirk, and we suggest you contact the publisher of the software you're using if it's causing you a problem.

# These glasses are you

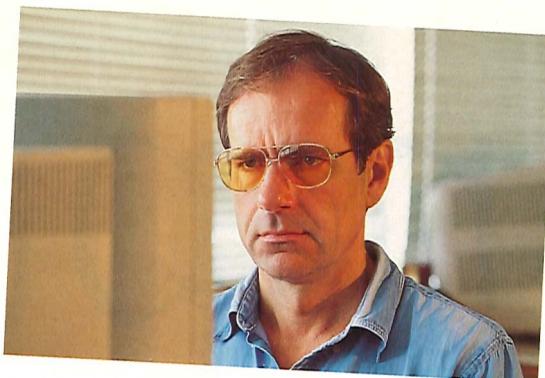
Computer Eyewear glasses are claimed to "overcome eyestrain by reducing glare, and blocking ultraviolet wavelengths most harmful to the human eye".

According to the distributor of the glasses, Centrepoint Computer Eyes, the orange-tinted lenses enhance contrast, reduce screen glare and block blue light.

We spoke to Stephen Dain, Associate Professor at the School of Optometry, University of NSW, and George Smith, Associate Professor at the Department of Optometry and Vision Science at the University of Melbourne, to find out whether this type of glasses provides real benefits.

The consensus is that:

- Computer monitors generate extremely low levels of UV radiation, so there's no point in wearing glasses to protect yourself from it.
- Orange and yellow tints make you think you see



more clearly, although they don't actually improve your eyesight.

- The blue light and flicker of fluorescent lighting, used in many offices, irritates some people's eyes. Orange and yellow tints do filter out this blue light, and this may explain why some people are more comfortable wearing these types of glasses.

## Our advice

- This type of glasses won't do you any harm. If you find they offer you relief from eyestrain, go ahead and use them, but consider taking measures to reduce eyestrain in the first place – see *Ways to avoid eyestrain* on page 27.

# My monitor is on fire

Expecting a quiet evening at home, Greg M from Canberra was surprised to see black smoke coming from his computer's KTX CE-364SG 15" monitor. By the time he'd unplugged it from his computer so he could take it outside, the monitor's casing was alight, and burning plastic was dripping on the desk and floor.

He managed to carry the monitor outside without injuring himself and put the fire out with a couple of buckets of water. Greg's sure the damage could have been more serious had he and his wife not been around.

The monitor was replaced the next day by Greg's supplier, as were the mouse, keyboard and speakers, which had also been damaged during the fire.

Edge Technology, the distributor of KTX monitors, sent the monitor back to Taiwan so its supplier could assess what went wrong. The report from Edge's Taiwanese supplier concluded the fault had been caused by a faulty electrical component.

If you're concerned about the electrical safety of computer equipment — we suggest that you:

- Make sure any computer equipment you buy conforms to the most recent electrical safety standards — in the case of computer equipment, AS/NZS 3260-1993. Computer monitors must be safe but don't have to comply with this standard — but it's a good sign the manufacturer cares about safety and quality if they do.
- Look for a certificates of suitability which may be issued by state electrical regulatory authorities on demonstration of compliance with that standard.

Certified products are marked with an allocated marking (for example CS1234N for NSW, CS1234V for Victoria and so on).

- Look instead for a CE mark, which is a manufacturer's declaration that the product is safe and complies with the European Low Voltage Directive. It is normally, but not necessarily, based on compliance with the European Standard.
- Turn off your monitor if you've finished with your computer for the day, or before you leave home.
- Check your monitor for any signs of overheating. Look for yellow stains on the casing or partially melted air vents, which indicate that the plastic has been affected by heat.
- Stop using equipment that is malfunctioning, even on an intermittent basis. An operational problem could develop into a safety hazard.

## Interesting Web sites

Here are a few sites with a consumer focus that you might like to look at when you're next surfing the Web. If you know of a Web site that might be of interest to other readers, please let us know about it.

### Australian Competition and Consumer Commission

<http://www.accc.gov.au>

Includes general information about the Australian Competition and Consumer Commission (ACCC), as well as on-line versions of most of the Commission's guidelines, publications and press releases.

### Consumer Association of Penang (CAP)

<http://www.idrc.org.sg/souths/cap/cap.htm>

### Consumers' Association of Canada

<http://www.cfn.cs.dal.ca/Commerce/CAC/cacscript.html>

Links to some interesting facts on food and other consumer issues.

### Public Citizen

[http://www.essential.org/orgs/public\\_citizen/](http://www.essential.org/orgs/public_citizen/)

Ralph Nader is not a man to be left out of a new medium.

## Computers in the home

Just under 30% of households in Australia own a computer, according to *Household Use of Information Technology*, a survey report by the Australian Bureau of Statistics.

In the 12 months prior to February 1996, 600,000 computers found their way into Australian homes. Overall household spending on computer equipment and software totalled \$3000 million.

The survey also found there was an estimated 262,000 people using the Internet from home.

And the most popular use for home computers? You guessed it — games.

# a computer by any other name

The most expensive computers aren't necessarily the best – that's the finding of our test of eight brand-name multimedia computers. Buying a brand-name computer is one way of avoiding most of the problems associated with cheap computers (see *A Computer for \$2000*, *Computer CHOICE*, Spring 1996). By 'brand-name', we mean well-known brands in the computer industry like Acer, Apple, Compaq, Dell, Gateway 2000, Hewlett Packard, IBM and Packard Bell – all of which are represented in our test. However, the brand name does come at a price: the ones in our test were up to \$2200 more expensive than equivalent no-name models.

All the computers we bought had identical minimum specifications (see *Our test* for details), but that doesn't mean they're all the same. Some computers were much faster than others. The top two PC performers in our test, the Gateway and Dell, were also the cheapest, and the more expensive IBM Aptiva was the slowest.

Interestingly, both the Dell and the Gateway are made by 'direct-sales' companies, which means you generally order the computer directly from the distributor over the phone, rather than going to a shop. You ring and tell the salesperson what you want, pay by credit card, and the computer is delivered to your door; the Dell is even set up for you.

The disadvantage is that you don't get to see the computer before you buy it, but both companies offer a 30-day money-back guarantee so you can return the computer if you're not satisfied with it.

## Setting them up

The first thing you see when you open the packaging is an illustrated, easy-to-follow instruction sheet or booklet for assembling the computer. All connection leads are colour-

coded or have icons that correspond to markings on the correct socket.

## What else do you get?

The brand-name computers came with lots of extras. Almost all of the systems have fax/modems, which means they can be used to access the Internet and to send and receive faxes. The Dell includes a network connection and the Packard Bell an FM radio. The Gateway 2000 was the only one supplied with a joystick for games, and all except the Dell came with a wide range of software.

Most of the tested computers have an on-site warranty as standard, which means a technician will come to your home to fix your computer if something goes wrong. And since all the models come from well-known manufacturers, there's a good chance the company will still be around in a year.

If you have trouble with your computer, it's useful to have someone you can call to help you. All the brands in our test have help lines to assist you set up and install your computer.

## Brand name or no name?

For the Spring issue of *Computer CHOICE*, we bought five computers that cost around \$2000, which is about \$2200 less than the most expensive computers in this test. So what do you get for the extra money?

Compared to the brand-name computers, the no-names were more difficult to set up, came with less software and hardware, and didn't have the helpful 'overlays' for beginners found on some of the brand-name computers.

On the other hand, some of the no-name computers tested were just as fast, if not faster than some of the brand-name computers in this test, even though the no-names only had 120 MHz Pentium CPUs (133 MHz in this test).



So your choice is between a good price and equal or better performance vs a hassle-free set-up and a lot of extras — which you may or may not end up using.

#### What about a Mac?

A Mac can do anything a PC can do, though for most uses you'll find there's a larger range of software available for PCs, especially when it comes to games. Without the aid of additional software or hardware, you can't run PC software on a Mac or vice versa.

The Macintosh Performa 5260 in our test was extremely easy to set up — the monitor, computer and speakers are in one unit, so it's simply a matter of plugging in a keyboard, mouse and power lead.

The Mac's operating system, Mac OS, is also easy to use. However, it is different from a PC and people who use Windows 3.1 or Windows 95 will probably take a while to get used to it — and vice versa.

#### Screen size — not what it seems

None of the monitors with the computers we tested had the viewing size as advertised. For example, the IBM Aptiva's so-called 15" monitor had an active viewing area of just 13.4" (340 mm, measured diagonally across the front of the screen), while the Gateway's nominally 15" monitor had the largest active viewing area at 14" (356 mm).

Every computer in this test has its own special motherboard design, which means it can't easily be replaced with the type used as a de facto standard by 'no-name' computer manufacturers (called an 'AT'-type motherboard).

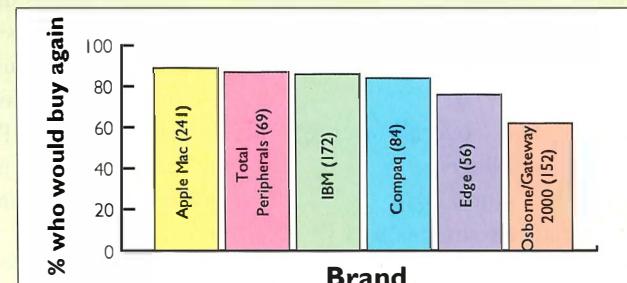
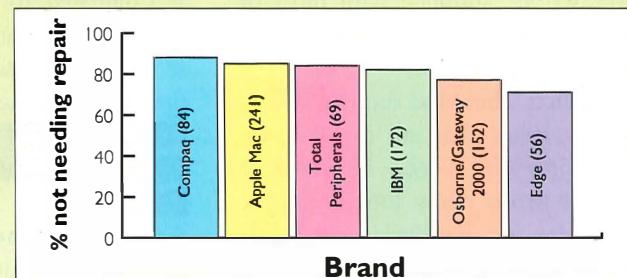
This means that if you want to upgrade the motherboard of your brand-name computer, you'll have to go back to the original manufacturer, and that may be expensive.

## The magic six steps to computer happiness

1. Ask yourself what you really want your computer for — an electronic typewriter or games console (see *Getting into games* on page 24) could be a cheaper alternative.
2. If you already know something about computers, a cheap 'no-name' model could be a good option, and save you a lot of money — but they aren't without problems (see *Computer CHOICE*, Spring 1996).
3. At present, we wouldn't recommend buying anything less than a computer with a Pentium 133 MHz CPU, 16 Mb RAM, 1.2 Gb hard disk and an oct-speed CD-ROM. If you're considering an Apple Mac look for similar specifications, except that the CPU should be a 120 MHz PowerPC.
4. Add up the cost of all the extras that come with the computer. You may be better off paying less for a computer that comes with just what you need, rather than a machine with extras that aren't necessary.
5. Our tests show there are differences in performance of brand-name computers with identical specifications, so if you're confident about using software, you might find it worthwhile to buy test software, such as Norton's Utilities or WinCheckIt Pro, and ask if you can do your own performance tests on computers you're thinking of buying.
6. Don't be afraid to haggle with a number of retailers to get the best deal.

## How reliable are they?

We asked a sample of *CHOICE* subscribers whether their computer had needed repair in the past 12 months and whether they would be likely to buy the same brand again. The results are given below for the most popular brands, where sufficient people reported on them (the number in brackets refers to the number of models of that brand in the survey). Note that the results of the survey are for computers of all types and models of each brand, not just for those in this test



## Our test

For our test we bought seven brand-name multimedia PCs and one Mac. Each of the PCs tested had a Pentium 133 MHz CPU, 16 Mb of RAM, and a minimum of a 1.2 Gb hard disk and a hex-speed CD-ROM. The Mac had identical specifications, except it had a 120 MHz PowerPC CPU.

### Our scores

The scores listed in the profiles were calculated as follows:

**Instructions score:** All the computers in our test were easy to set up — the only difference was the quality of the instructions.

**Performance:** This score takes into account how quickly the computer was able to spell-check a 345-page document using *MS Word 6*, perform a calculation 10,000 times using *MS Excel 5*, and how well it was able to run three graphics-intensive games. We also checked the performance results of the PCs against results generated by *WinCheckIt Pro* and *Norton's Utilities* diagnostic software, so we're confident this score reflects both real-world and theoretical performance.

We tried to test the Mac using the Mac versions of the same software as the PCs (*MS Word* and *MS Excel*), but found the programs too slow when dealing with the large document and complex calculation. We then compared the times taken for the spell-check and a different calculation using *Claris Works* (supplied with the Mac) vs *MS Works* (supplied with most of the PCs) and found the Mac to be faster than all the PCs.

**Our verdict:** The Mac running *Claris Works* is faster than all the PCs we tested using *MS Works*. However, if you need to do really long, complex calculations or handle large documents, you'll need to choose your Mac software very carefully — certainly when we tried *MS Word* and *MS Excel* for these uses, they ran much faster on a PC.

**Overall:** The overall score\* is calculated as follows:

- Instruction score: 20%
- Performance score: 80%

\*Because we couldn't do all the same tests on the Mac as on the PC, it can't be given a comparable overall score.

## PROFILES



### Apple PowerPC Macintosh Performa 5260/120

Price: \$3195

Distributor: Apple

Contact number: 1800 025 355

Configuration: All-in-one case.

Instructions score: 100%

Performance score: 85%

Overall: See Our scores, left.

**Warranty:** One year parts-and-labour return-to-base warranty.

**System bought:** PowerPC 120 MHz CPU, 16 Mb RAM, oct-speed CD-ROM, on-board sound, on-board video, 1.6 Gb hard disk, 14" monitor\*

standard Mac keyboard, Mac OS operating system.

#### Good points

- Very easy to set up.
- Comes with a good range of software.
- Can also be used as an answering machine, but not as a phone.
- 'Launcher' makes it easy for beginners to access different programs on the computer.

#### Bad points

- Compared to the PCs in this test, internal expansion options are limited.
- There is a black border area around the active viewing area.

#### General comments

Overall, the **Performa** is a good machine. It's easy to set up and use, and comes with a good range of software. However, if you want to use it for games, you'll find the range available fairly narrow, compared to the PC. It's certainly worth considering, but make sure the software you want to use is available for a Mac.

\*(12.4" (314 mm) active viewing area).

### Gateway 2000 P5-133

Price: \$2900 plus delivery charge

Distributor: Gateway 2000; you buy it by phone.

Contact number: 1800 674 757

Configuration: Can be converted between tower and desktop.

Instructions score: 95%

Performance score: 85%

Overall score: 87%

**Warranty:** 30-day money-back guarantee; one-year on-site parts-and-labour warranty within 50 km of a Gateway 2000 authorised service centre; a further 24-month parts warranty if returned to a Gateway 2000 service centre

**System bought:** Pentium 133 MHz CPU, 16 Mb RAM, oct-speed CD-ROM, Sound Blaster 16 sound card, Cirrus logic video card, 1.2 Gb hard disk, 15" monitor (14" (354 mm) active viewing area), 104 enhanced keyboard, Windows 95 operating system.

#### Good points

- One of the fastest computers in our test.
- Comes with a good range of software.
- Comes with a joystick and a mouse pad.
- Comes with longer extension cables for keyboard and monitor, making it easy to stow the computer under your desk.
- The monitor has a de-gaussing circuit and control, which removes unwanted magnetic fields that may affect the picture quality.
- Volume control and headphone socket on the CD-ROM drive.

#### Bad points

- The warranty states that components provided under warranty may not be new.

#### General comments

Despite being one of the cheapest computers we tested, the **Gateway 2000** is a fast machine that comes with many accessories.



**RECOMMENDED  
AS A HOME OFFICE  
COMPUTER - NOT  
FOR GAMES**

## Dell Family PC GXMT 5133

**Price:** \$2779 without a fax/modem, \$3094 with a 28.8 fax/modem.

No software other than Windows 95 is supplied, so allow around \$320 for extra software. Delivery costs extra.

**Distributor:** Dell; you buy it by phone.

**Contact number:** 1800 808 312

**Configuration:** Tower or desktop.

**Instructions score:** 100%

**Performance score:** 85%

**Overall score:** 88%

**Warranty:** 30-day money-back guarantee; three-year parts-and-labour warranty (first year is on-site); one year on monitor.

**System bought:** Pentium 133 MHz CPU, 16 Mb RAM, oct-speed CD-ROM, sound card built into motherboard, video card built into motherboard, 1.6 Gb hard disk, 15" monitor (13.6" (345 mm) active viewing area), 104 enhanced keyboard, Windows 95 operating system. \*Some components changing soon.

### Good points

- One of the fastest computers in our test.
- Comes with a very comprehensive user's and troubleshooting manuals.
- CD-ROM drive has headphone socket and volume control on front.
- The monitor has a de-gaussing circuit which removes unwanted magnetic fields that may affect the picture quality.

### Bad points

- Doesn't come with a modem unless you specify one and pay extra.
- The support hotline is not available on weekends or public holidays.
- No games port, which means there is nowhere to plug in a joystick. You'd have to go to a different supplier to have one fitted if you want to play games.

### General comments

A good, fast computer that's also good value for money, but you need to know what you're doing when you order by phone to make sure you get any hardware extras or software you want.



## Compaq Presario 4704

**Price:** \$3699

**Distributor:** Compaq

**Contact number:** 1800 636 800 or (02) 9911 1999 in Sydney.

**Configuration:** Tower or desktop.

**Instruction score:** 95%

**Performance score:** 80%

**Overall score:** 83%

**Warranty:** One-year on-site parts-and-labour warranty.

**System bought:** Pentium 133 MHz CPU, 16 Mb RAM, oct-speed CD-ROM, AudioDrive sound card, S3 video card, 1.6 Gb hard disk, 14" monitor (13" (330 mm) active viewing area), 104 enhanced keyboard, Windows 95 operating system.

### Good points

- Different users can set up the computer screen/desktop as they like and the computer can store these settings.
- Easy-to-use 'sleep' button puts the computer into power-saving mode.
- CD-ROM drive and phone buttons are easy to use because they're on top of the computer.
- Has a headphone socket on the speaker.
- Can also be used as a telephone or answering machine.

### Bad points

- Main on/off switch is at the back of the system unit and therefore hard to reach if it's under your desk.
- The 14" monitor has the smallest active viewing area in the test.
- Noisy hard disk.
- Speaker mounting is not very secure — they're likely to fall off if knocked.
- Helpline only available on weekdays.
- The warranty states that components provided under warranty may not be new.

### General comments

A good computer overall, but pricy.



## Packard Bell Platinum 320CDX

**Price:** \$4199

**Distributor:** Packard Bell

**Contact number:** (02) 9700 5000

**Configuration:** Tower only.

**Instructions score:** 90%

**Performance score:** 80%

**Overall score:** 82%

**Warranty:** One-year on-site for parts and labour. Owners more than 50 km from an authorised service centre must pay for travel costs or send their computer to a service centre at their own expense.

**System bought:** Pentium 133 MHz CPU, 16 Mb RAM, hex-speed CD ROM, Aztech sound card, Onboard video card, 2 Gb hard drive, 15" monitor (13.5" (343 mm) active viewing area), 104 enhanced keyboard, Windows 95 operating system.

### Good points

- A very good operating system overlay called Navigator, which makes it easier for beginners to use the computer.
- Comes with a good range of software.
- Can be used as a phone or answering machine, and a dedicated function key on the keyboard brings up a row of icons on the screen that control the phone, FM radio and answering machine.
- Comes with an infrared remote control to operate some aspects of the computer, such as if you're using the CD-ROM drive to play music CDs.

### Bad points

- The 'Call Centre' that runs the phone/answering machine is hard to learn but then easy to use.

### General comments

One of the most expensive computers tested, probably due to the range of extras it comes with, such as a remote control and a phone. Other models tested were faster performers. This model is to be discontinued soon.

## PROFILES



### Hewlett Packard Pavilion 7122\*

Price: \$3399

Distributor: Hewlett Packard

Contact number: 131347

Configuration: Tower only.

Instructions score: 85%

Performance score: 75%

Overall score: 77%

Warranty: One-year parts and labour on-site

Certain (unspecified) areas are excluded from this, for which charges will apply.

System bought: Pentium 133 MHz CPU, 16 Mb RAM, hex-speed CD-ROM, Crystallake multimedia sound card, video card built into motherboard, 1.6 Gb hard disk, 15" monitor (13.6" (345 mm) active viewing area), 104 enhanced keyboard, Windows 95 operating system.

#### Good points

- Operating system overlay makes the computer easier to use for beginners.
- Comes with a good range of software.
- Can be used as a telephone or answering machine, and the on-screen phone is very easy and intuitive to use.
- Mute button on monitor if you need to turn the sound down fast.
- Has a headphone socket on the monitor.

#### Bad points

- The volume control on the monitor is not easy to use.

#### General comments

Another slightly more expensive model that seems to come with bells and whistles instead of top performance — some home users may prefer this.

\* This model has been replaced by the 7222, which has a different audio tone control, additional software, and an oct-speed CD-ROM.



### Acer Aspire 3563e\*

Price: \$4199

Distributor: Acer

Contact number: (02) 9870 1999

Configuration: Tower or desktop.

Instructions score: 65%

Performance score: 75%

Overall: 73%

Warranty: One-year on-site parts and labour

System bought: Pentium 133 MHz CPU, 16 Mb RAM, oct-speed CD-ROM, Sound Blaster 16 sound card, Mach 64 PCI video card, 1.2 Gb hard disk, 15" monitor (13.6" (345 mm) active viewing area), 104 enhanced keyboard, Windows 95 operating system.

#### Good points

- Has an operating system overlay, which makes it easier for beginners to use the computer.
- Comes with a wide range of software, largely reference works.
- The speakers are built into the monitor, along with a microphone, which gives a neater appearance, with fewer individual components and leads. There is a headphone socket on the front of monitor.
- Voice-recognition software allows you to start programs and carry out certain tasks with spoken commands.
- Can also be used as a telephone or answering machine.

#### Bad points

- The cooling fan inside the computer was noisy.
- Young children may be tempted to poke things into the holes in the monitor case, which could be dangerous.
- CD-ROM drive open/close button is very difficult to operate.

- The warranty states that components provided under warranty may not be new.

#### General comments

It's a slightly more expensive computer with a lot of extra bells and whistles that some people might appreciate.

\* This model is being replaced by the 3763e, which has a larger hard disk.



### IBM Aptiva 76Y31\*

Price: \$3599

Distributor: IBM

Contact number: 132426

Configuration: Tower only.

Instructions score: 85%

Performance score: 55%

Overall: 61%

Warranty: One year on-site parts-and-labour warranty, further two years parts only.

System bought: Pentium 133 MHz CPU, 16 Mb RAM, hex-speed CD-ROM, Mwave sound card, SIS PCI video card, 1.2 Gb hard disk, 15" monitor (13.4" (340 mm) active viewing area), 104 enhanced keyboard, Windows 95 operating system.

#### Good points

- Comes with *Lotus SmartSuite* software, which includes a word processor, spreadsheet and database that are much more powerful than the software supplied with the other computers. There's also a good range of other software.
- Rapid-resume power-up, which all but shuts down the computer and then restarts without needing to reboot.

#### Bad points

- No separate video RAM — 'borrows' 2 Mb from overall RAM.
- The slowest computer in this test, perhaps partly because it doesn't have any 'level two (L2) external cache' (a way of speeding up the operation of the CPU), which can be bought for around \$30.
- The warranty states that components provided under warranty may not be new.

#### General comments

While we think too much speed has been sacrificed — for whatever reason — in this computer, the software that comes with it would cost several hundred dollars to purchase separately, and would be a good starting point for most home offices.

\* This model will soon be replaced by a new model with a 1.6 Gb hard disk and an oct-speed CD-ROM.

## James Discovers Math

- Distributor: Dataflow
- Producer: Developed in Sydney by BRAINS, published by US company Brøderbund.
- Price: \$80
- Recommended age group: Three to six
- Available for: PC CD-ROM, Mac CD-ROM
- Minimum requirements:

  - PC: 33 MHz 386 DX, 4 Mb RAM (8 Mb RAM for Windows 95), double-speed CD-ROM drive.
  - Mac: 25 MHz 68030 CPU, 4 Mb RAM, double-speed CD-ROM drive.

- Tested on: PC CD-ROM
- Overall rating: Thumbs up

*James Discovers Math* consists of 10 'skill-building activities' that introduce basic mathematical concepts to young children.

The program opens with James sitting in the kitchen reading a book. Each section of the program is accessible from the kitchen by clicking on one of the graphics, which animate when you click on them.

Clicking on the television brings up a selection of animated nursery rhymes set to music that feature numbers.

Clicking on the fridge takes you to a picture-making program, where children can create (and print) pictures by dragging coloured shapes onto the screen.

The clock leads to a time-telling activity with a robot guide; the tug-boat opens a shape-matching game in which the child helps the captains of ships to load shapes as cargo; the fruit bowl opens a shopping activity in which the child fills orders for customers.

The coloured pencils give children practice in measuring and estimating the length of a series of interesting characters; the photo on the wall leads to another picture-making activity — this time animal faces are created and the concept of shape attributes (such as large, medium and small) is developed.

The playing blocks on the floor lead to a section that presents the basic concepts of addition and subtraction. The floor mat introduces tessellation (arrangement of tiles or blocks in patterns) and allows the children to colour the tile patterns they select.

### Multimedia features

*James Discovers Math* is extremely engaging. It has a large number of highly imaginative graphics and animations, and the music and sound effects are clever and entertaining.

The navigation is simple and effective; the buttons that allow the user to do a variety of things within each activity (for example, to turn

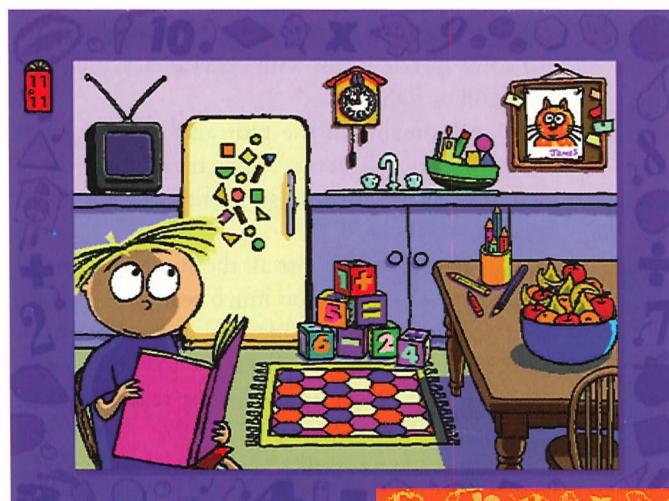
off helpful voice-overs or to move to the 'free explore' version) are easy to understand and use.

### Ease of use

We asked six children aged between three and seven to try *James Discovers Math*; all of them enjoyed using the program. One comment made by a parent was: "The children were laughing and very focused while playing."

Generally, the package is very easy to use. Most three-year olds who have used a mouse before will be able to use it without adult intervention. It is entirely mouse-driven, with no typing required.

There are occasional inconsistencies of style and operation, and there are one or two places where it isn't obvious how to do certain things. There are probably not enough of these to concern or frustrate children.



### Educational tool

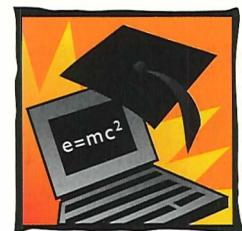
The package is one which children will enjoy and from which they will learn a variety of mathematical concepts. It is also a package children will want to return to and use over and over.

Some of the activities use methods which encourage rote learning rather than exploration and discovery learning, which is preferable and generally leads to a deeper understanding of the concepts. This is particularly obvious in the addition and subtraction section.

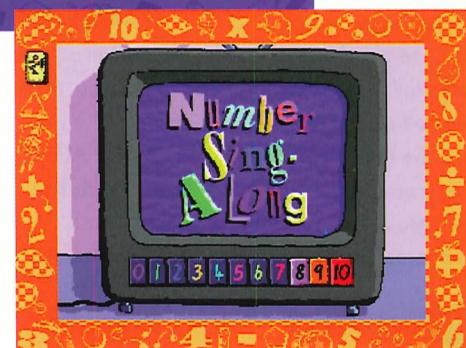
### Overall

*James Discovers Math* is a thoroughly engaging program and will keep youngsters involved and thinking while they are using it.

While it was produced in Australia, it does have some Americanisms because it was published by Brøderbund in the USA.



**James Discovers Math is reviewed by Beth Cavallari, head of Educational Multimedia Services at the University of Queensland.**





## How we reviewed the games

Four students from Strathfield Girls' High and four students from Homebush Boys' High were invited to spend a day playing games. A team of two students played each game for 40 minutes, and then filled out a questionnaire. Four adults who are regular computer game players also came and did the same thing. The reviews are based on their comments and the scores they gave for each game's graphics, sound, controls and game play.

Each tester was also asked to give the game an overall score from one to five: one is very bad, five is very good. The scores were averaged and converted to the ratings as follows:



**Thumbs up**



**Mixed feelings**



**Thumbs down**

All games were tested on multimedia Pentium-class computers.

## Albion

- Local distributor: Playcorp
- Price: \$90
- Classification: General (8 years and over – low level animated violence)
- Available for: PC CD-ROM
- System requirements:  
PC: 486 CPU, 8 Mb RAM, double-speed CD-ROM drive.
- Tested on: PC CD-ROM

ADULTS' CHOICE

Set in outer space, *Albion* is a science fiction role playing game. You control a character called Tom Driscoll, who's about to pilot an exploratory shuttle to a newly discovered mineral-rich planet. You start the game on a spaceship that is approaching the new planet.

The area you're in is displayed on the screen. You simply direct your character to the area you want to explore. Throughout the game you have to solve puzzles, talk with other characters, and sometimes fight them.

Developments in the plot and conversations with other characters appear as text in a window on the screen, so there's quite a lot of reading to do.

**Students:** Almost all the students thought that there was too much reading involved, and for some, this made the game boring. A typical comment: "I could go to sleep while playing." One suggestion was the text should be spoken by the computer.

Some students couldn't figure out what to do: "It doesn't direct you anywhere; it doesn't tell you where you are."

On the other hand some students (especially the girls) enjoyed the graphics and the game play, and said *Albion* was worth buying.

**Adults:** *Albion* was much more popular with adults, though there was still a feeling that there was a little too much text: "It would make a better story than a game."

One adult tester who liked the game said: "The story is fantastic – very impressive plot, the graphics are good, and the instruction manual is easy to use."



## Quake

- Local distributor: Roadshow Interactive
- Price: \$90
- Classification: MA-Restricted (15 years and over — high-level animated violence)
- Available for: PC CD-ROM (Macintosh version expected early 1997)
- System requirements:  
PC: Pentium CPU, 16 Mb RAM, CD-ROM drive.
- Tested on: PC CD-ROM

EXCESSIVE VIOLENCE!

Killing alien monsters before they kill you is the main aim of *Quake*. Playing in the first-person perspective, you run through a three-dimensional maze-like world killing everything in sight.

Along the way you'll come across a number of weapons such as double-barrel shot guns, nail guns, grenade launchers, rocket launchers and, of course, the Thunderbolt. You'll get to shoot "bad guys" such as Zombies, Ogres, Death Knights, Enforcers, as well as Rottweilers — though some of our testers felt squeamish about shooting dogs. And unlike most games, the bad guys do bleed when you shoot them.

When played on a fast machine (we used a Pentium 133 with 16 Mb of RAM in our test), the 3D graphics are fast and smooth.

**Students:** "Too violent" was a comment made by three of the students, while two of the male students got headaches and felt dizzy while playing this game.

"Too much blood was shown when someone was shot to death," said one female student.

Most of the students liked the graphics and sound. A couple said they thought this game was exciting and liked the "anticipation of what is around the corner".

**Adults:** Most of the adults thought the sound and graphics were very good: "The nicest yet in 3D-style games," was one comment. But on the whole they weren't too impressed with the game.

When asked about *Quake*'s worst features, one tester replied: "Boring, bloody, killing dogs, bland, unimaginative, repetitive, no plot and no point."

Only one of the adult testers thought the game was worth buying, but even she admitted that, "If you're not into violence, gore, and slaughtering evil creatures from the dungeon dimensions, this game is not for you."

## ARL 96 Rugby League



■ Local distributor: Electronic Arts

■ Price: \$90

■ Classification: General

■ Available for: PC CD-ROM, Sega Mega Drive

■ System requirements:

PC: Pentium CPU, 16 Mb RAM and quad-speed CD-ROM.

■ Tested on: PC CD-ROM

**ARL 96** is a rugby league simulator that features the teams of the Australian Rugby League. You choose the team you want and then play against other teams in the competition of your preference, including the Optus Cup, Euro League, Origin and International.

Once you've gone through the formalities of picking your team and competition, it's time to get into the action. On your screen you see a scrolling footy field. At any point in time you control one player who can run, kick and pass the ball, as well as tackle other players. You can also switch between different players while you're playing.

Throughout the game Paul 'Fatty' Vautin pops up with useful comments like: "You're a joke."

**Students:** This game was liked by both male and female students. Six of them thought it was worth buying.

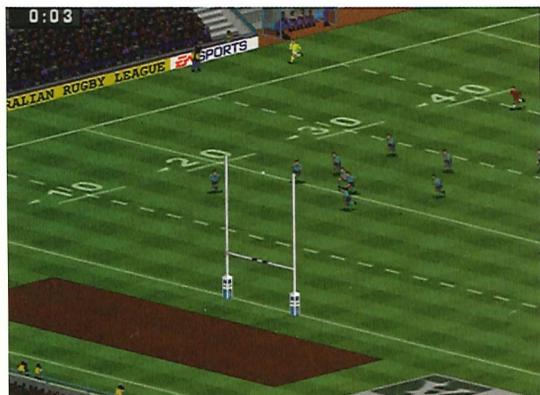
All the students were impressed with the sound and graphics — "excellent" was a typical comment. One student said: "ARL is very realistic. Commentary by Ray Warren is great."

The main complaint, made by four students, was that the controls were difficult to use.

**Adults:** None of the adult testers felt it was worth buying — but most did think it was quite a good game.

One tester admitted that while ARL was "really good fun" and she cheered when she scored, she wouldn't buy it for herself. She did, however, know people who were into football and would "love this game".

Another tester backed up this feeling with: "Definitely a game for the fans."



## Jagged Alliance: Deadly Games

■ Local distributor: Directsoft Australia

■ Price: \$100

■ Classification: Mature (15 years and over — medium-level animated violence)

■ Available for: PC CD-ROM

■ System requirements:

PC: 66 MHz 486 CPU, 8 Mb RAM, double-speed CD-ROM.

■ Tested on: PC CD-ROM

"It's time to lead a band of quirky mercenaries into battle" — that's how the manual introduces the game.

Before starting, you select mercenaries for your team — each mercenary has their strengths and weaknesses. In addition, some mercenaries specialise in areas such as medicine or mechanics, and so are only useful for certain missions. There's a set number of turns for each mission. For example, you might have 20 turns to retrieve a set of top-secret blueprints.

A map of the area you're working in is displayed on the screen, and when you instruct a mercenary to carry out an instruction, you see it happen. During the course of each turn, each mercenary can perform a number of tasks, such as move, pick up an object, shoot, or use an item they're carrying.

**Students:** Five students thought *Deadly Games* was hard to work out and one thought the controls were confusing. There were differing views about the graphics quality. When asked about the best and worst features of *Deadly Games*, four mentioned graphics as the worst feature, while three thought they were the best.

The one student who felt this game was worth buying liked it because you have to "think" and there were many different scenarios.

**Adults:** While there was a feeling that the game was a little more bloody and violent than it needed to be, the game was more popular with the adult testers. One tester noted that the "game obviously requires strategies to complete missions". She also thought it was easy to get started (if you read the manual) and that there was enough control over game play to keep it "addictive". The other tester who liked the game said he appreciated the tactics.

Graphics and sound were generally considered mediocre.

Come  
and play  
some  
games

You're invited to volunteer to help us test computer games for the March issue of Computer CHOICE. We're based in Marrickville in Sydney's inner south-west, so we have to apologise to readers in other areas who can't get to our office.

You'll have to play each game for 40 minutes and then fill in a questionnaire. There'll be four games to test.

We plan to hold two sessions on Saturday, January 11, 1997, the first starting at 9 am and another starting at 2 pm. Each session will last approximately four hours.

If you'd like to be involved, please write to: Playware/Computer CHOICE, 57 Carrington Road, Marrickville NSW 2204, or e-mail us at ausconsumer@choice.com.au. Numbers are limited, and we need to hear from you before December 18, 1996. Don't forget to include your daytime phone number or your e-mail address.

# Shareware



hareware isn't a particular type of software, it's a method of distributing software. The idea is that you can get hold of the program and try it out before you have to pay for it. If you want to keep using a shareware program after the trial period ends, you simply pay the nominated price for it, which registers your copy of the software and lets you use it legally.

If you don't like it or it doesn't do what you want, simply remove it from your system and you don't have to pay. It's the old try-before-you-buy idea brought into the computer age.

The types of program distributed as shareware are many and varied — everything from simple utilities and novelty programs such as screen savers through to quite complex software like Web browsers. Computer games are another big shareware favourite. The mega-hit computer game *Doom* started life as a shareware game.

## Where do you get it?

Shareware has been around almost as long as the home computer, but the method for getting it has changed considerably. Before the Internet and CD-ROM drives became popular, the most common method of distributing shareware was via floppy disks, which could be purchased for a small fee from computer stores or ordered by mail through various shareware catalogues.

There are now many sites on the Internet from which you can download shareware programs. Some of the bigger companies such as Apple (<http://www.apple.com.au>) and Microsoft (<http://www.microsoft.com.au>) have pointers to software which you can download. The home page of the Internet access provider you have your Internet account with may also have listings of shareware programs.

One of the easiest ways to find shareware on the Internet

is to visit one of the sites dedicated to providing it (see *Shareware on the Web* on page 16). These sites usually contain a great number of shareware programs, or links to them, which are indexed and organised by category. So you can either search for a particular program or browse for a type of program, such as anti-virus software.

Many of these sites also provide reviews of the programs and some of the larger sites have a rating system, which is a great help when trying to choose which program you want to download and have a look at.

## Not on the Net?

If you have a modem but not access to the Internet, you can get many shareware programs through bulletin board systems. A BBS is a computer which you can link up to by using a modem and a terminal program (you should get a terminal program when you buy your modem). Many BBS have lists of shareware available to download.

For a list of bulletin boards throughout Australia, contact Rodney Creer at the Australian BBS Registry on (047) 35 3334, or write to PO Box 731, Penrith 2751.

If you don't have a modem, all is not lost. Many computer stores have compilations of shareware available on CD-ROM for about \$30. Keep in mind, though, that purchasing a CD-ROM with shareware on it doesn't mean you've paid for the shareware programs — the cost of

the CD-ROM doesn't cover the registration fees of the shareware on it.

You can install the programs you want to try from the CD-ROM, but if you want to keep using them you'll have to pay the registration fees.

It's also still possible to buy shareware on floppy disk — expect to pay around \$5 per disk. Again, you'll still have to pay extra to register the software if you want to continue using it.

## Confessions of a shareware junkie

Rob describes himself as an avid computer hobbyist. He owns a 486 PC and runs Windows 95 as his operating system.

Rob got into shareware when he opened an Internet account about 12 months ago. "When I started playing about with the Internet I found I needed all sorts of utility programs.

"Shareware was the perfect answer. There's a myriad of programs available that can be downloaded from the Internet."

At the moment Rob has three main shareware programs on his computer — Net Toob movie player, VuePrint graphics viewer and WinZip archiving utility.

"I tried out several graphics viewers and movie players before settling on VuePrint and Net Toob. They had a couple of features that I found particularly useful.

"WinZip was a must because many of the files that you download from the Internet are in compressed format and you

need a program like WinZip to access them."

Rob used e-mail and a credit card to register the programs.

"All the programs had registration forms built in, so it was a simple matter of filling in the details and sending the forms to the vendors via e-mail. Registration was pretty cheap for all three programs. VuePrint was the most expensive at US\$40, but this was still cheaper than buying many of the commercial programs."

While Rob is sold on the idea of shareware, he does recognise it has some drawbacks.

"The majority of programs I've tried have been OK, but shareware is a bit of a mixed bag. Most of the programs behave themselves, but you do get the odd one that does funny things to your system. But then again I've paid good money for commercial programs that have caused problems too."



### Anatomy of a shareware program

For some people, shareware conjures up the image of second-class software or software written by amateurs. The truth is that shareware is a mixed bag. Some programs are extremely well written and compare with so-called 'shrink wrapped' commercial programs in quality, but other shareware offerings aren't so good. The advantage over shrink-wrapped programs, however, is that you're not paying up front to find out if it's a loser or not.

Be aware, though, that shareware programs usually don't come with comprehensive user manuals and may not have much support. The upside is that many shareware programs are relatively cheap to register compared with buying similar shrink-wrapped offerings, although if the program is not Australian, you'll have currency conversion and extra postage costs to consider.

Whenever you install a shareware program on your system, remember that shareware is not free.

All shareware programs will display a list of conditions of use, detailing the limitations which apply. They may, for instance, allow a 21-day evaluation period after which, if you wish to continue to use the software, you must pay the registration fee. If you don't pay and continue to use it you will be breaching the author's international copyright.

Many shareware programs include mechanisms to 'remind' you to register. One method is for the program to keep putting messages on the screen telling you to register and asking for a registration number. This is called a 'nag screen' or a 'guilt screen', and is disabled once the program has been registered and a valid registration number is entered.

Some shareware is 'time-crippled', meaning that it will stop working when the trial period is over unless you pay.

Another method to thwart would-be software pirates is to limit the unregistered program in some way. One popular shareware movie viewer does this by only allowing you to play movie files under 1 Mb in size until you've registered it. This still lets you try out the product, but limits its usefulness for practical applications.

Many shareware programs offer some support and upgrade services as an enticement to register.

### Zippers and viruses

To make it easy for people to download shareware programs over bulletin boards or the Internet, many programs are stored in a compressed form. To install a program which has been compressed or 'zipped' you will need to 'unzip' it, and to do this you'll need some sort of compression program.

The best way to get one of these programs is to download a shareware version from the Net itself. Refer to *Shareware on the Web* on page 16 for a list of shareware Web sites. Most of these will have a category dealing with compression or archiving utilities.

Read the description of the programs listed and choose one that takes your fancy. It's shareware, so if you don't like it you can download a different one and try it out.

When you download shareware from the Internet or a bulletin board you're downloading program files. Program files, unfortunately, can contain viruses (see *How to kill a computer virus* in the last issue) and it's a good idea to scan any shareware files you download before you do anything with them.

If you don't have a virus scanning program on your computer, you can download one as shareware. Once again, start with the sites listed in *Shareware on the Web*.

## Shareware on the Web

If you have Internet access, here are a few shareware sites you might like to visit.

### ZD Net Software Library

Internet address: <http://www.hotfiles.com>

**Overview:** ZD Net is a great place to start looking for that must-have utility or program. It offers an extensive collection of shareware for both PC and Macintosh.



All programs have a brief review attached and are given a mouse rating (five mice being the best). The company claims to have over 10,000 files listed on its site, which includes a search facility. There's also an Editors' Picks section which gives pointers to special articles and reviews appearing on the site.

ZD Net also offers free registration, which includes among other things a bi-weekly e-mail newsletter which details the latest programs added to the library. Registration also includes access to a daily news service that can be personalised to provide the information you're interested in.

### TUCOWS

Internet address: <http://tucows.rucc.net.au>

**Overview:** TUCOWS stand for The Ultimate Collection Of Winsock Software. The Internet address given above is an Australian mirror of the company's main site in the US at <http://www.tucows.com>.



### Getting registered

Most shareware programs explain how to register as part of the installation process. Sometimes the information is included in a 'readme' file that comes with the program.

Generally included is a copy of a registration letter which you can print out, fill in and either mail or fax to the company.

The term Winsock in the title refers to Windows sockets, a protocol used in communications software to link up to the Internet.

This site primarily lists programs related to the Internet, such as Web browsers, e-mail programs, etc. But it also includes many utility programs like picture viewers, movie viewers and anti-virus software.

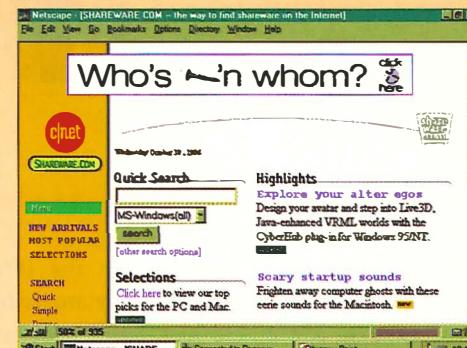
The site contains programs for both PCs and Macs. Each program has a brief description and a link to the home page of the software company that produces it, so you can find out more information. Programs are rated on a 'cow' scale, with five cows being the best.

Because this site is 'mirrored' in Australia, download times for programs can be significantly less than for overseas sites.

### Shareware.com

Internet address: <http://www.shareware.com>

**Overview:** Shareware.com is a shareware library run by cnet, an online computer magazine. The site lists shareware for both PC and Macintosh, as well as for Amiga and Atari computers.



The site is primarily search driven, which is good if you know what program you're looking for but not if you just want to browse. You can however browse through lists of new arrivals, most popular programs or a selection of files on particular topics. Programs are listed with a description, but the site doesn't have a rating system, although it does have a popularity chart.

Like ZD Net, Shareware.com has a weekly e-mail newsletter you can subscribe to to keep up-to-date on the latest shareware offerings.

### Stroud's Consummate Winsock Applications

Internet address: <http://www.starvision.net/cwsapps> or <http://cwsapps.tower.net.au>

**Overview:** The addresses given are for Australian mirror sites of the main Stroud's US site at <http://www.stroud.com>. The site only lists programs for Windows-based PCs.

Some shareware can be registered directly on the Web via your browser at the company's home page, or by e-mail.

If the program has some form of protection, such as those detailed above, once the company has processed your registration you will then be sent some form of registration code (by mail or e-mail) that will let you override the protection.



All programs are listed with a description and a star rating (five stars being the best), and there's a full review available for each program. The site also contains a list of top 20 applications and a 'cool application of the week'. There's a search facility and also a good alphabetical index if you know or are looking for the name of a particular program you want to find.

## Microsoft & WUGNET Best Choice Shareware Hall of Fame

**Internet address:** <http://www.wugnet.com/shareware>

**Overview:** This site is part of the Windows Users Group Network, and as such only lists programs for Windows-based PCs. Unlike the other sites listed, it doesn't provide a shareware database to browse through, so you have to know what program you want. There's a shareware pick-of-the-week, which includes a description of the program and where to get it.

While limited in scope, this site does provide useful resources for Windows users.



Another way you can find shareware on the Net is to look at some of the popular Web indexes. One popular site is Yahoo (<http://www.yahoo.com>). This contains a category listing for 'Computers and Internet' which has a listing for software archives. You can then follow the links and see what comes up.

Happy surfing!

If you have a modem and an Internet account, you have access to a wealth of reasonably priced programs covering every conceivable application. Shareware allows you to explore the depth and breadth of computing, and even have a little fun along the way. If you discover a 'must have' program, tell your friends about it. That's what shareware's all about.

## The search for shareware

One way of locating shareware on the Internet is to use the various search engines available on the Web. A search engine basically offers you a form in which you can enter keywords. The engine then searches its database of Web sites to find matches for the words you entered. Most Web browsers have a search button which takes you to one or more of these search engine sites.



The following gives a step-by-step description of how to search for shareware using AltaVista, one of the most popular Web search engines.

- 1) Start up your Web browser and go to <http://www.altavista.com>.
- 2) When the Web page loads you will be presented with a form. There are two boxes at the top of the form. The left-hand box shows what is being searched; the default is "the Web". The right-hand box shows how the results of the search will be displayed. The default is "in standard form". Leave these boxes set to their default values.
- 3) There is an empty box just below the first two boxes. This is where you enter the words you wish to search for. Click in the empty box. There should now be a blinking cursor in it.
- 4) Type in the words you wish to search for. For a first attempt type in "shareware".
- 5) Click on the button marked "submit".
- 6) Wait till AltaVista loads the results page. You'll now see a list of Web pages that contain the word "shareware". There'll probably be several thousand matches for your query and AltaVista will display them 10 at a time with a brief description of each page. To go to a page, simply click on the underlined title of the page.
- 7) You can narrow your search by adding more keywords. For example, to search for shareware games, in step four above type in "+shareware +games". The + sign in front of a word indicates that you definitely want that word included. Without the plus signs AltaVista would find anything containing either "shareware" or "games" or both. For a complete list of these special search symbols, click on the 'Help' button at the top of the search results screen.

Here are the Internet addresses of some other popular search engines. The procedure for using them is similar to that described above.

Yahoo: <http://www.yahoo.com>

Lycos: <http://www.lycos.com>

infoSeek: <http://guide.infoseek.com>

Magellan: <http://www.mckinley.com>



**Do you want to buy new-release CDs for \$15? If so, the Internet may have something more to offer you than just e-mail and information.**



If you fancy dropping into music shops in Europe, the US and Canada, there are a number of them on the World Wide Web. Armed with a credit or charge card you can compare prices around the world and have CDs delivered to your door in a matter of days. But are there any potential problems if you decide to go Internet shopping, and what are the legal implications?

#### The risks you take

- As with a telephone or mail order, you run the risk the goods you ordered will be damaged when they turn up. Ordering goods from overseas could mean you have to pay high postal costs to return an item. And getting redress if the wrong things are delivered, or if they're faulty, could easily be more trouble and expense than it's worth.
- On the other hand, if the goods simply don't arrive you may have some protection if you've paid by credit or charge card. You should tell the card issuer (and confirm it in writing). If the merchant can't prove the goods were sent it (or the institution that processed the sale) may have to wear the loss.
- If your card is used fraudulently you should get in touch with your card issuer as soon as you're aware of the problem. It could also result in considerable hassle for you, sorting out which are the genuine transactions, and perhaps having a new card issued. However, your liability is probably limited to \$50 (unless you've given away your PIN or been party to the fraud) — check the terms and conditions of your card.

#### How likely is fraud on the Internet?

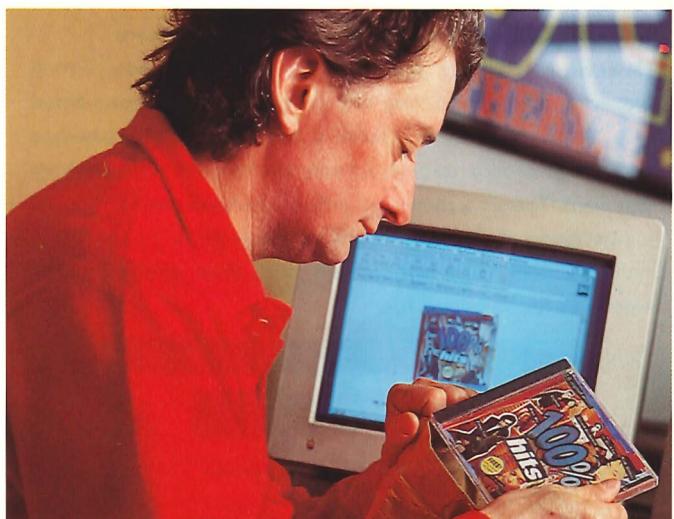
The potential problems with fraud if you use your credit card on the Internet have been widely discussed. However,

the card companies we spoke to haven't reported problems resulting from the transmission of credit card numbers on the Internet — though in theory it is possible for someone to monitor messages and extract them.

The program you use to surf the web (such as Netscape Navigator or Microsoft Internet Explorer) may also allow details to be sent in code (encrypted) — this will make it less likely your credit card details will be intercepted and misused.

American Express has a leaflet for US customers offering advice to people using their card for purchases, which includes the following sensible advice:

- If you can't use encryption, send the card number some other way — by phone or fax.
- Shop with companies you know. Find out about the company's refund and return policies before you place an order, and the likely delay before sending the goods.
- Check your order carefully before sending it — a careless keystroke could mean you end up with 11 copies of a CD rather than just one.
- Print out a copy of your order (and any confirmation number) for your records.



**CDs are cheap on the Internet — if everything goes smoothly**

During 1997 some card companies expect to have Secure Electronic Transactions (SETs) in place. This will allow you to use SET-compliant software for purchases on the Internet that will link the merchant, card company and customer — and result in the exchange of electronic 'certificates' which effectively 'sign' the order without transmitting your card number.

#### Legal matters

If you buy an Australian musician's CD from the US, say, the artist may receive a lower royalty than if you bought it here. However, there are no copyright implications if you're importing the CD for your own use — our copyright laws simply mean you aren't allowed to bring in CDs for distribution because the record companies own the Australian copyright.

Arguments rage about whether this is a good or a bad thing: on the one hand it's claimed that it protects Australian musicians and the Australian record industry,

which could otherwise be overwhelmed by overseas products. On the other, it may just be that consumers are paying higher prices to record companies which are being protected from international competition. You may also be damaging the business of your local music shop.

What you make of these arguments depends on your point of view. At Computer CHOICE we see no justification for high CD prices for Australian consumers. Professor Alan Fels at the Australian Competition and Consumer Commission (ACCC) says:

*For years Australian CD prices have far exceeded prices in the US. ACCC studies show that neither royalties nor taxes account for the differences ... The industry keeps claiming there is little price difference; if this is the case then why would we be flooded with imports? The threat [of being flooded with imports] would reduce prices to a level where people preferred to buy Australian products.*

*The irony is that the law does not prevent import of CDs by record companies, it just gives them a monopoly. This CD import monopoly does not guarantee Australian product, just that imports must be by record companies.*

## Music business

You can find CD shops on the Internet by using one of the search engines such as Yahoo (<http://www.yahoo.com>) — try entering something like 'CD + music + shopping'. We found a broad selection of shops, some offering specialist CDs, others with a very wide range.

As we went to press the quoted exchange rate for US dollars was AUS\$1 = US\$0.79. However, when you spend money with a credit card in a foreign currency there will also be charges to be paid. Cards work in different ways but, for example, you may get a commercial exchange rate less 1% — which is likely to be better than the 'tourist' rate for cash or travellers' cheques.

The CD Web sites we found are set up so that you first search for the CDs you want and then compile an order. You are then prompted for the delivery address and your credit card number. For this article, we ordered CDs from three such CD shopping sites, and compared the cost with buying those same CDs locally (the average of prices at three Sydney music shops):

### Shop: CD Universe (<http://www.cduniverse.com>)

**CDs ordered:** Crowded House/Recurring Dream (US\$12.77), Kate & Anna McGarrigle/Dancer With Bruised Knees (US\$13.20)

**Delivery:** US\$8.05 for airmail (two CDs). E-mail confirmation of the order was received. Other delivery options were available, including cheaper surface mail.

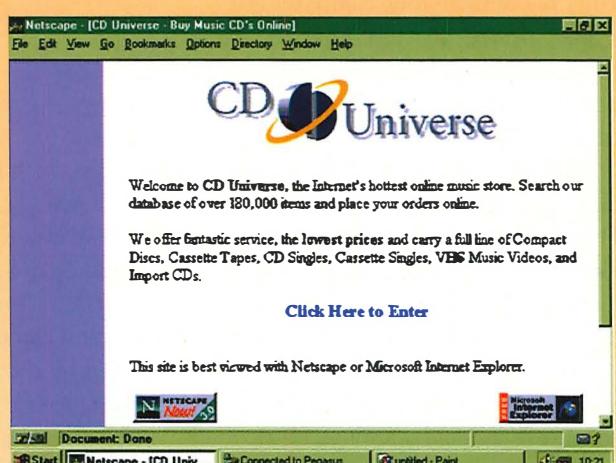
**Total cost:** US\$34.02. Amount charged on credit card: AUS\$43.67. Saving over buying the same CDs in Australia: \$13.50.

**Comments:** Initially we had difficulty putting more than one CD in the 'shopping basket', but once that was sorted out (by altering the options in Netscape to switch off the proxy server) things worked properly. On arrival, 10 days later, both the CD cases (though not the CDs) were damaged, despite being sent in a thick cardboard box.

CDs in Australia are imported duty-free, but caught by a 22% wholesale sales tax if bought here. On CDs bought overseas you could be charged tax levied at a rate of 26.4% of the purchase price, but Australian Customs doesn't collect tax on personal imports where the tax would be less than \$50 (so an order under \$189 wouldn't have tax applied).

### Our advice

- Shopping on the Internet may be a bit of a gamble — companies can come and go very easily. However, if your credit card number is used fraudulently your liability may be limited, and if goods don't arrive the card company may help too. Issuers encourage you not to use your card on the Net, and you may feel uncomfortable about it as well. If so, phone or fax your card number, as suggested earlier.
- You need to watch for high postal costs. We found a range from around \$6 to over \$15 for sending one CD to Australia — so although the price may be lower than here, a CD could cost more by the time it arrives than buying from your local record shop. Buying larger numbers than we did would spread the cost.
- And if you've sent your credit card details over the Net, check your future bills with extra care.



### Shop: AB CDs (<http://www.abcds.com>)

**CDs ordered:** k d lang/All You Can Eat (US\$14.59), Ruben Blades/Y Son Del Solar Live (US\$10.54)

**Delivery:** US\$7.50 for airmail. E-mail confirmation of the order was received.

**Total cost:** US\$32.63. Amount charged on credit card: AUS\$42.03. Saving over buying the same CDs in Australia: \$17.

**Comments:** Initially we ordered three CDs, but one was out of stock and just the two shown were sent. They arrived 12 days after ordering, in good condition.

### Shop: CD Plus (<http://www.cd-plus.com>)

**CDs ordered:** Andy Sheppard/Andy Sheppard (CAN\$17.98), Basic Wagner (CAN\$11.98)

**Comments:** As we were going to press, we had still not received these CDs. An e-mail enquiry to CD Plus resulted in a reply explaining that the CDs were out of stock and were being ordered.

# Upgrading computer

Once you've answered the four questions on this page, refer to pages 21 to 23 for how individual components of your computer can be upgraded.

## 1. Why would I want to upgrade my computer?

Do any of these comments sound familiar?

- The moment you took your new computer home, it was no longer state of the art.
- You only bought your computer last year and already it's too slow to do some of the things you want to do.
- Your computer just doesn't have the features you now want.

If they do, perhaps it's time to upgrade your computer.

There are many ways of doing this. At one extreme you can simply buy a new computer and try to sell your old one. For some older types of computer this is the best option — see *Can my computer be upgraded?* for details.

For newer-model computers all that may be needed is a faster CPU or more RAM to bring them up to date.

This article should help you decide when it's better to cut your losses and buy a new computer.

## 2. Can my computer be upgraded?

So how do you know if it's worth upgrading your computer? Here's a rough guide. If you have a:

- Pentium-based computer, upgrading the CPU, hard disk and RAM, will probably keep you happy for some time yet.
- 486 machine, you can probably keep it up to date by upgrading the CPU, hard disk and RAM and possibly the motherboard.
- 386 or older computer, it may be better to replace your whole machine,

## ADVANCED LEVEL

This story makes frequent reference to technical terms. If you come across words you don't understand, please turn to Technobabble on page 31.

as virtually all the components will need to be upgraded.

- If you're after multimedia, your computer will need to have sound capabilities and a CD-ROM drive.
- If you don't have a PC or Mac your upgrade options are probably limited. You'll need to decide whether to stick with Acorn, Amiga or whatever and buy a newer version, or whether to change to a PC or Mac.

## 3. What components can be upgraded and how much will it cost?

As long as you have a standard PC, most of its components can be upgraded, including the motherboard, CPU, RAM, sound card, video card, hard disk and CD-ROM drive.

Some brand-name computers have proprietary motherboards, which means you can only use motherboards, supplied by the manufacturer, and not cheaper generic 'AT'-style ones.

The goal of any upgrade is to spend less than the cost a new computer. Unfortunately, the general rule is that the faster you want your computer to be, the more it will cost you.

For example, if you want to upgrade a 486-based computer by adding

a PCI-bus motherboard, Pentium 133 CPU, 1.2 Gb hard disk and 16 Mb RAM, expect to pay around \$900 to \$1300, plus labour if you can't do it yourself. This is still cheaper than buying a new computer.

One strategy to make it easier on your pocket is to upgrade one part at a time. Start off by changing the RAM, and then the motherboard, CPU, and hard disk.

Upgrading your computer may allow it to match the performance of much more recent machines, but don't expect it to stay current for very long. If new software still runs on your computer in 12 months as quickly as you would like, you're doing well.

## 4. Can I do it myself?

Most upgrades are quite easy if you know what you're doing. However, things can go wrong, so if you have any doubts about your abilities, have it done by someone who can deal with problems if they arise. Most stores will do the upgrade for you — but the typical labour charge is around \$30 to \$55 per hour.

You should also check that you're not invalidating your computer's warranty by doing an upgrade yourself.

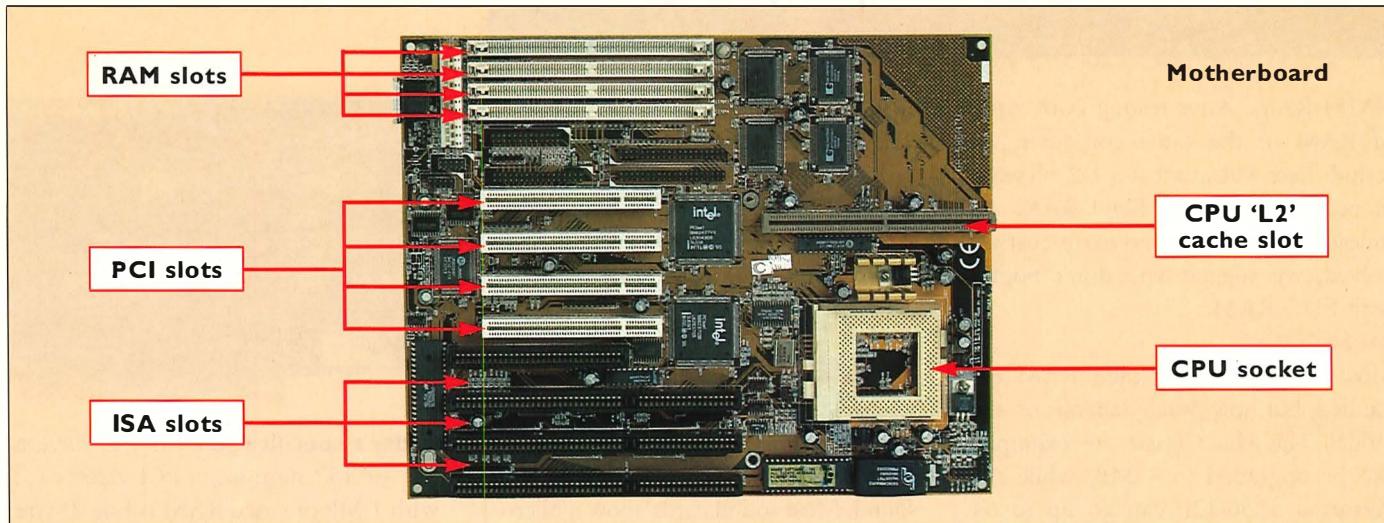
If you're prepared to regard it as a learning experience and can afford to take the risk, doing it yourself is a great way to find your way around your computer and increase your knowledge and confidence.

## But what about my Mac?

Upgrading a Mac is in some ways simpler than upgrading a PC. Some components, such as CD-ROM drives and hard disks, shouldn't be a problem, and for others like the CPU and motherboard, the options available really depend on which Mac you own.

To make it easier for Mac users, Apple has information on its Web page that provides some information about upgrading your Mac (<http://www.apple.com.au>). It will tell you if your machine can be upgraded at all and what it can be upgraded to.

If you don't have access to the Internet, you can call Apple technical support on 1300 300 995. They will be happy to outline your options.



## Motherboard

**What it does:** It's the main circuit board in your computer that holds the CPU, memory, expansion slots and other device controllers.

**Today's specifications:** A board with a PCI bus (see Technobabble) that can accommodate CPUs running up to 200 MHz.

**Estimated cost of components:** A PCI-bus motherboard without CPU will cost you around \$170 to \$250.

**Estimated labour cost:** \$15 to \$60.

### How do I know if I need to upgrade?

- The motherboard won't accommodate the CPU of your choice.

- You can't use the sound, video or other cards you want to.

### How do I know if I can upgrade?

- The system case or tower must be able to fit an AT-style motherboard (roughly the size of an A4 piece of paper) and have a power supply that will cope with the new motherboard's power demand.

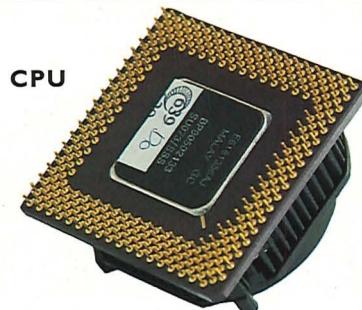
### And the Mac?

The motherboards of some Macs can be replaced, but it's expensive. For example, the Quadra 800 can be upgraded to a more recent Power Mac 8500 for between \$1200 and \$1500, which also includes CPU, sound and video.

## CPU

**What it does:** The CPU is the main brain of the computer. It's a very complex set of electrical circuits that carries out instructions from software and the operating system.

**Today's specifications:** The entry level for most computer buyers today will be a 133 MHz CPU.



**Estimated cost:** A 133 MHz CPU by AMD, Cyrix, IBM or Intel costs between \$275 to \$500.

**Estimated labour cost:** \$15 to \$35.

### How do I know if I need to upgrade?

- New software is running slowly.
- The recommended CPU speed of software you want to use exceeds your computer's CPU.

### How do I know if I can upgrade?

- Find out from the technical manual that came with your computer whether your motherboard can accept a faster CPU. Don't expect to be able to upgrade an old 386 or 486 with the latest Pentium 200. 'Overdrive' chips are available for some 486 and Pentium computers – they can be used in situations where it's not possible to simply replace the existing CPU).

### What's the difference between AMD, Cyrix, IBM and Intel CPUs?

The Intel Pentium CPU is widely regarded as the de facto standard. The 686 CPUs manufactured by Cyrix and IBM, and the K5 by AMD, are the Pentium's competitors. We tested CPUs with an internal clock speed of 133 MHz, as well as a Pentium operating at 166 MHz, to see how they compared. (see *Mini test*, page 23).

### And the Mac?

CPUs on 'daughter boards' (a type of plug-in card) are available for some Macs. For example, the Quadra 7600

and 8500 series can be upgraded to a PowerPC CPU for \$900 to \$1500.

## RAM

**What it does:** It's the computer's main short-term storage area for writing, storing and retrieving information so it can be used by the CPU. RAM is measured in megabytes (Mb).

**Today's specifications:** Most new computers have 16 Mb RAM.



**Estimated cost of components:** 16 Mb of RAM will cost you around \$140 to \$230, while 8 Mb of RAM (to add to existing RAM) will be around \$70 to \$110.

**Estimated labour cost:** \$15 to \$40.

### How do I know if I need to upgrade?

- Software is running slowly or requests more memory.
- Computer slows down when multiple programs are open at the same time.
- Not enough RAM to run new software well, or at all.

### How do I know if I can upgrade?

- Consult the technical manual that came with your computer to find out how much the type of RAM that is supported by the computer's motherboard.

- Look for unused RAM slots on the motherboard.

### Is EDO (Extended Data Out) RAM any better?

A lot of new computers come with EDO RAM, rather than standard



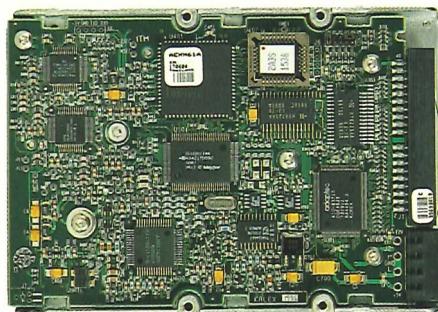
SIMM RAM. After testing both types of RAM in the same computer, we found there was at most a 1% increase in performance with EDO RAM. So unless there's little or no extra cost involved, we suggest you don't bother with EDO RAM.

#### And the Mac?

Most Macs can have their RAM expanded, but how much depends on the model. The Mac Classic, for example, can be upgraded to 4 MB, while the Performa 5260/120 can go up to 64 Mb of RAM.

## Hard disk

**What it does:** Long-term storage of your computer's software and other information. Information can be written to, stored on and retrieved from the hard disk. The most common types of hard disks are IDE and E-IDE (enhanced IDE). Hard disk capacity is measured in megabytes (Mb) and gigabytes (Gb).



**Today's specifications:** Most new computers have at least an IDE 1.2 Gb hard disk.

**Estimated cost of components:** A 1.2 Gb hard disk will cost \$230 to \$350. Estimated labour cost: \$15 to \$50.

#### How do I know if I need to upgrade?

- Your existing hard disk is full, and you can't delete any files to make space.

#### How do I know if I can upgrade?

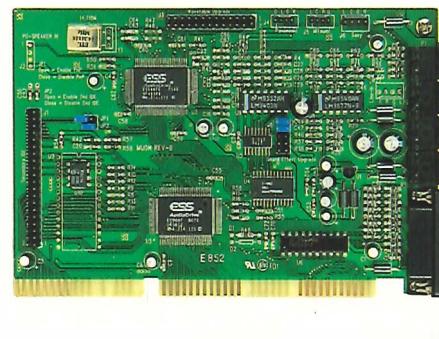
- Most hard disks can be upgraded. It's best to consult the technical manual that came with your computer, or the dealer you bought the computer from, to find out the type of hard disk in your computer. If your computer is less than two years old (486 or later) chances are it will have an IDE or E-IDE hard disk, and you should have no problems locating a larger-capacity one.

#### And the Mac?

The hard disk of most Macs can be upgraded. It's also possible to add an external hard disk via the SCSI port, though this is more expensive than adding an internal hard disk.

## Sound card

**What it does:** Converts information from the CD-ROM and programs into sound. Most sound cards allow a microphone to be added to them, allowing you to record sounds on your computer.



**Today's specifications:** The minimum standard is a 16-bit sound card with its own IDE port.

**Estimated cost of components:** A 16-bit card by itself will cost you \$60 to \$120, or expect to pay around \$330 if you buy it as part of a basic multimedia kit, which also includes a CD-ROM drive and other extras.

**Estimated labour cost:** \$15 to \$40.

#### How do I know if I need to upgrade?

- You don't have a sound card in your computer.

- You have a sound card, but it has problems coping with modern software.

#### How do I know if I can upgrade?

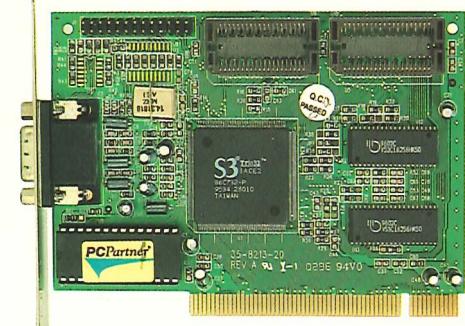
- Your computer has a spare 16-bit ISA slot (see *Technobabble*) for the card to go into.

#### And the Mac?

Macs have sound capabilities built into the motherboard, so it's unusual for the average Mac user to buy a plug-in sound card, though it can be done.

## Video card

**What it does:** A video card converts information from the computer into a form that can be displayed on the monitor.



**Today's specifications:** If you have a 14" or 15" monitor, a PCI video card with 1 Mb of video RAM is fine. If you have a 17" or bigger monitor, 2 Mb of video RAM are needed if you want plenty of colours on the screen.

**Estimated cost of components:** A 1 Mb PCI video card will cost around \$70 to \$130; \$100 to \$200 for 2 Mb.

**Estimated cost of labour:** \$15 to \$30.

#### How do I know if I need to upgrade?

- Your current card does not support the higher screen resolutions of your monitor, and you want to be able to use those modes.

#### How do I know if I can upgrade?

- If your computer has a spare slot, or an existing video card, you can probably add a new card.

#### And the Mac?

If your Mac has a spare Nubus, PCI or video slot, it can be upgraded with a new graphics card.

## CD-ROM drive

**What it does:** Allows you to load information – including software, graphics, music, video and text – from CD-ROMs. The speed of a CD-ROM drive is rated in multiples of 150 kbps (kilobytes per second). A single-speed drive operates at 150 kbps, while a oct-speed transfers information at 1200 kbps.



**Today's specifications:** Many new computers come with oct-speed drives.

**Estimated cost of components:** An oct-speed drive by itself will cost you \$150 to \$250, or around \$350 if you

## MINI TEST

buy it as part of a basic multimedia kit (See *Multimedia kits* in the Spring issue of *Computer CHOICE*).

**Estimated labour cost:** \$20 to \$40.

### How do I know if I need to upgrade?

- You'd like to play games or use multimedia software on CD-ROM.
- Video animations are slow and jerky.
- Software takes an unusually long time to install or load from CD-ROMs.

### How do I know if I can upgrade?

- You have an existing CD-ROM drive that uses an IDE (integral drive electronics) controller (check your computer's manual if you're not sure).
- There is a spare 5<sup>1</sup>/<sub>4</sub>" spare drive bay (a rectangular slot on the front of your computer) where you can fit the CD-ROM drive, and the computer's existing power supply has a spare outlet.

### And the Mac?

Early Macs without a CD-ROM drive can have an external CD-ROM connected to their SCSI port — though this type of CD-ROM is more expensive than 'internal' models. The built-in CD-ROM drive of later models can in most cases be replaced with a faster version.

## Safety tips for upgrading your computer

- Back up important system files (and important personal files) on floppy disks in case something goes wrong with your system files or hard disk.
- Always disconnect your computer from the mains power supply before working on it.
- Discharge any static build-up on yourself by touching an 'earth' — a screw on the computer case for example — before you start opening things up.
- Use an anti-static strap whenever you handle the internal components of your computer.
- Don't open up the power supply box or the monitor. These may contain high voltages even after being disconnected from the mains power supply.

In this mini test, we look at:

- The differences between Cyrix, IBM and Intel CPUs.
- Whether it's worthwhile going with EDO RAM rather than standard RAM.
- Whether a 512 kb CPU cache is much better than a 256 kb cache.

### Which CPU is fastest?

If you're shopping around for a CPU, you may come across not only the Intel Pentium, but rival CPUs by AMD, IBM and Cyrix. We decided to test CPUs with a 133 MHz internal clock that claimed to offer Pentium-class performance.

The four CPUs we decided to look at were the Cyrix 686-133 (which cost us \$349), IBM 686-133 (\$275), Intel Pentium 133 (\$325) and Intel Pentium 166 (\$575). We included a Pentium operating at 166 Mhz because both the IBM and Cyrix CPUs claim to match its performance. We wanted to look at AMD's K5 CPU, but it was not available at the time we were testing.

We used Norton System Information to find out how much faster each CPU was than a 386 CPU running at 16 MHz. The Pentium 133 was 35.8 times faster than the 386, while the IBM was 46 times faster and the Cyrix 46.1 times faster. The Pentium 166 was 37 times faster than the 386, which seems to indicate that the IBM and Cyrix CPUs offer more speed and better value for money. We also used other diagnostic software to check our results.

With a number of rival CPUs based on different technologies but essentially doing the same thing, quoting the performance of a particular CPU can be a problem for consumers. Some manufacturers have tried to solve this problem by devising a rating system that can be used to compare the CPUs. This 'P-rating' relates the actual performance of the CPU to an equivalent Pentium. This makes it easier to compare different CPUs on the market.

The Cyrix and the IBM CPUs had a P-rating of 'P166'. Although both of them run at an internal speed of 133 Mhz, the manufacturers claim their real performance is equivalent to or better than a Pentium 166. Our test certainly found this to be true.

When you buy a computer or a CPU, be careful about what processor you're getting. If it isn't a Pentium, ask the salesperson what its P-rating is. For example, the 586-based computer we tested in *A computer for \$2000?* (*Computer CHOICE*, Spring 1996) had a clock speed of 133 MHz, but was actually equivalent to a Pentium 75 (a P-rating of P75) — considerably lower than expected.

### CPU cache

A CPU cache is RAM that is used to store information that is frequently used by the CPU — it's also referred to as a level-two external cache. We tested the computer with 256 kb and 512 kb of cache RAM to see if there was a marked difference in performance — and found an average increase in speed of 8%.

### Is EDO RAM worthwhile?

EDO (extended data out) RAM is cropping up in a lot of advertisements. To find out if it's much better than standard SIMM RAM, we tested the performance of a computer with 16 Mb of EDO RAM, and then tested it again with 16 Mb of standard SIMM RAM. This test was carried out on a new motherboard that was able to handle both types of RAM.

The two sets of RAM gave us performance results that were so close you could say there was little or no difference — at most the EDO RAM was 1% faster. So unless there's little or no extra cost, don't bother with EDO RAM.

### Summary of findings

- The Cyrix 686-133 and IBM 686-133 CPUs offer great performance at a good price.
- A level-two CPU cache is important. Go for 512 kb whenever possible.
- EDO RAM doesn't offer a significant improvement over standard SIMM RAM.

# Getting into Games

If you're thinking of buying or upgrading a computer just to play games, a console might be a cheaper alternative. But are the games as good?

Games are one of the most popular uses for computers at home – but spending \$2000 or more on a computer just to play games seems a bit steep. To see what you can buy on a much lower budget, we decided to look at the Sega Saturn and Sony PlayStation, the latest generation of games consoles. Nintendo's new console, the Nintendo 64, won't be released in Australia until March next year, and so couldn't be included in this test (see *A new-look Mario*, below right).

Think of a games console as a stripped-down computer with just the bare essentials you need to play games. Instead of a computer monitor, the console connects to your television. Games are played with hand controllers that plug straight into the console.

Games for the PlayStation and the Saturn come on CD, and you can only use CDs especially designed for each of the consoles. You can't use PC or Mac CD-ROMs, for example.

## Pros

- At around \$400, consoles are much cheaper than a new computer. The cost of games is comparable to the price of similar full-price games for the PC or Mac – around \$100.
- Games consoles are easy to set up and use.
- Most of our testers considered the games they played on the consoles to be as good, if not better, than games they'd played on multimedia PCs.

## Cons

The consoles can only be used for games (though both can also be used to listen to audio CDs and the Saturn can be used to play CD+G and CD+EG — CDs that contain pictures as well as music).

- Upgrade options are limited.
- Shareware and public-domain software are not available for consoles, so you'll have to pay the full price for any games you play.

## What to look out for

Neither console comes with any real games (though they both have a demonstration CD with playable demos of games). So you'll have to spend extra money buying games when you buy a console, and this could be expensive at around \$100 each.

- Only one controller is supplied with each console. If you want two people to play at once, you'll have to pay another \$50 or more for an extra hand controller.
- If you want to be able to save your position in a game you'll need a memory card, and that will cost you \$40 for the PlayStation or \$100 for the Saturn (the Saturn memory card has eight times the capacity of the PlayStation memory card).

## A new-look Mario

The Nintendo 64 is Nintendo's new games console, but as it won't be available in Australia until March, it couldn't be included in this test.

Computer CHOICE attended an informal demonstration of a Japanese Nintendo 64 at Nintendo's Sydney office.

Two games were demonstrated – *Super Mario 64* and *Pilot Wings 64* – and while both were in Japanese, they showed that the system is capable of some impressive graphics and sound effects. The Nintendo 64 uses cartridges rather than CDs to store its games.

Nintendo says the Nintendo 64 will cost around \$400 and games around \$100. We'll buy and test a Nintendo 64 as soon as it's available.



## Sony PlayStation

- Distributor: Sony Computer Entertainment
- Price: \$400
- Number of games available: 180-190\*
- Typical price of games: \$90-\$100
- Comes with: Games console, instruction booklet, demonstration CD, hand controller, power lead and audio/video lead.
- Games used in our test: Total NBA '96, Wipeout, Battle Arena Toshinden 2.

The Sony PlayStation connects to your television through its video and audio inputs. If your TV doesn't have these connections, you can connect it through your video player. For this reason the picture generated by the PlayStation is slightly sharper than the Sega, which is connected to the TV through its antenna socket.

However, this does mean that if your TV doesn't have video and audio inputs and you don't have a video, you'll have to buy an adapter for the PlayStation for \$50 to let you connect through the TV's antenna socket.

The PlayStation is simple to set up and operate. Starting a new game is simply a matter of popping in a CD and turning the console on.

The main complaint the testers had about the PlayStation was the hand controller: "The controls on the Playstation were terrible, and as a result of this the games were very hard to play."

The PlayStation can also be used to play audio CDs.

\*Company estimate for December 1996.

## How they compare

There was no clear winner in our test. What we found was:

- Of the six adult testers, three felt the **Saturn** was better overall, while the other three liked the **PlayStation** better.
- Four of the student testers thought the **Saturn** was better, two the **PlayStation**, and two had no preference.
- All the students thought the **Saturn** games were as good as, or better than, computer games they had played. All except one thought this was also true about the **PlayStation**.
- Three adults said that they thought the games on the **Saturn** were not as good as computer games they'd played. Two adults also thought this was true about the **PlayStation**.



## Sega Saturn

- Distributor: Sega
- Price: \$400
- Number of games available: 200\*
- Typical price of games: \$90-\$100
- Comes with: Games console, instruction booklet, demonstration CD, hand controller, power lead, RF converter (to connect to your TV's antenna socket).
- Games used in our test: Sega Rally Championship, Virtua Fighter 2, Panzer Dragoon 2.

The Saturn comes with an adapter that lets you use it with any TV that has an antenna socket. However, it also means that the picture quality isn't as sharp as the PlayStation's. A lead that allows you to connect the Sega directly to the video and audio inputs on your television or video is available for \$30.

Like the PlayStation, loading a game is a matter of inserting a CD and turning the Saturn on.

Most testers preferred the Saturn's hand controller over the PlayStation's: "Controls are easy to figure out without having to refer to the manual every few minutes."

The Saturn can be used to play audio CDs, as well as CD+G and CD+EG, which are simply audio CDs that also contain pictures.

\*Company estimate for December 1996.

## Recommendation

Our testers had differing views about which console was best — except that most of them found the **Saturn's** hand controller easier to use than the **PlayStation's**. Since both consoles cost around \$400, there's little to choose between them, except the games that are available.

- Our advice is to check whether the types of game you like to play are available for the console you're thinking of buying, and make a decision on that basis. Also try the hand controller to see if you find it comfortable and easy to use.

# Computer monitors

## Profiles

Note: While the models within each size are listed in rank order, all the monitors were 'good' or better – you can safely choose among them based on actual image size or price, if budget is a concern.



### 15" MODELS

#### NEC MultiSync XV15+

Actual image size: 13.7" (348 mm)

Dot pitch: 0.28 mm

Price: \$850

Picture quality: Excellent; a warm image – reddish tint in greys.

##### Good points

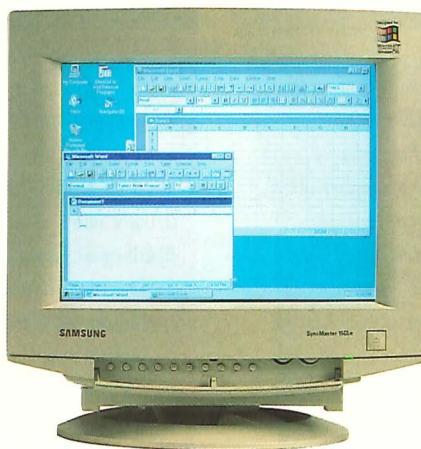
- Its consistently excellent picture overcomes its smallish actual viewing area to make it a top performer.
- Front panel controls easy to use.

##### Bad points

- Hard-to-read labels.
- Limited ability to tilt face upward.

##### Our verdict

- Excellent performance, but other monitors are better value for money.



#### MAG InnoVision DX1595

Actual image size: 14.3" (363 mm)

Dot pitch: 0.28 mm

Price: \$530

Picture quality: Good; a very cool image with a green tint that can be seen in greys.

##### Good points

- Largest image of the 15" monitors tested.
- Front panel controls easy to access and operate.

##### Bad points

- Images have less contrast than on other monitors.
- Limited ability to tilt face in upward direction.

##### Our verdict

- Good value overall.

#### Samsung SyncMaster 15GLE

Actual image area: 13.8" (351 mm)

Dot pitch: 0.28 mm

Price: \$655

Picture quality: Very good; a cool image with a greenish tint in greys.

##### Good points

- Consistent, strong performance in all tests.
- Controls easy to access and operate.

##### Bad points

- Hard-to-read labels.

##### Our verdict

but controls let you adjust the 'temperature'.

- Controls and on-screen menu are easy to use.

##### Bad points

- None to speak of.

##### Our verdict

- An excellent performer; good value.

#### Sony Multiscan 17sfl

Image size: 16" (406 mm)

Dot pitch: 0.25 mm

Price: \$1700

Picture quality: Very good; image is free from colour tinting in grey areas.

On-screen display, colour temperature and colour level controls.

##### Good points

- Continuous colour temperature control.
- Front panel controls are easy to use, labels easy to read.

##### Bad points

- Two faint horizontal lines in the display can be distracting under some conditions.

##### Our verdict

- Very good performance, but other monitors are better value for money.

#### MAG InnoVision DX1795

Image size: 16.3" (414 mm)

Dot pitch: 0.26 mm

Price: \$1110

Picture quality: Good

On-screen display, colour temperature and colour level controls.

##### Good points

- A generally cool image; controls let you compensate.
- The largest image of the 17" models we tested.
- Front-panel control buttons are easy to access, and on-screen display is very easy to operate.

##### Bad points

- Images are less sharp and have less contrast than on the other monitors.
- Labels are hard to read.

##### Our verdict

### 17" MODELS

#### NEC MultiSync XV17+

Actual image size: 15.3" (389 mm)

Dot pitch: 0.28 mm

Price: \$1325

Picture quality: Very good; a yellow-green tint can be seen in greys.

On-screen menu, colour temperature controls.

Colour-matching software for printer.

##### Good points

- Its excellent picture outweighs its having the smallest actual image of the 17-inchers tested, to make it a top performer.



If you have any comments or experiences you would like to share with other readers, please write to: Interface, Computer CHOICE, 57 Carrington Road, Marrickville 2204, or e-mail us at [ausconsumer@choice.com.au](mailto:ausconsumer@choice.com.au)

#### Reader survey and feedback

Thank you to everyone who wrote to us and took the time to fill in and send back the reader questionnaires.

Every letter and questionnaire was carefully read, and provided a really useful insight into what you, as the reader, expect from the magazine.

So what types of computer are used by Computer CHOICE readers?

- 80% of readers who responded own a PC.
- 7% own a Mac.
- 2% own both a Mac and a PC.
- 3% own another type of computer such as Amiga, Amstrad or Atari.
- 8% don't own a computer, but most are planning to buy one in the near future.

The questionnaire also revealed that 23% of you are on the Internet. Work has started on a Computer CHOICE Web page, which will develop as the magazine grows. It will provide up-to-date information between issues of the magazine. To check out our efforts so far, direct your Web software to <http://www.sofcom.com.au/ACA/ComputerChoice/Cchhp.htm>

The most popular article idea was

Getting the most out of your computer – 59% of readers are very interested in this. 52% are very interested in 20 tips for successfully installing new software in your computer.

Net nannies – protecting your kids from Internet nasties was of least interest, with only 14% of readers very interested.

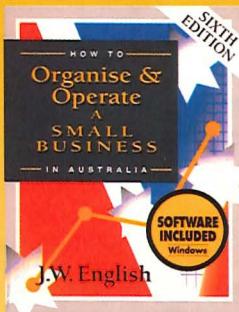
#### Phone feedback

A readership survey was conducted over the phone in early October, asking 113 Computer CHOICE readers what they thought of the Spring issue.

Of readers who had already looked at the magazine, 76% said they'd been interested in the article *Shopping Around*, while only 57% were interested in *A digital camera for the home*.

Everyone at Computer CHOICE would like to continue hearing from our readers. Please feel free to write or e-mail if you have any comments or suggestions about the magazine.

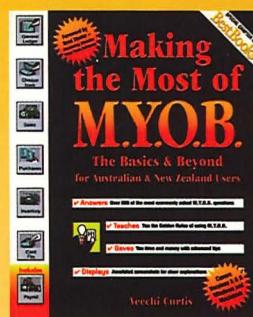
## Computer CHOICE: Consumer Bookshelf



### How to Organise and Operate a Small Business in Australia

One of the most popular small business handbooks written for Australia. This sixth edition comes with two Windows disks which offer you a selection of exercises to increase your understanding of the issues involved in starting up and running a small business.

\$50 paperback 358 pp  
with two Windows disks



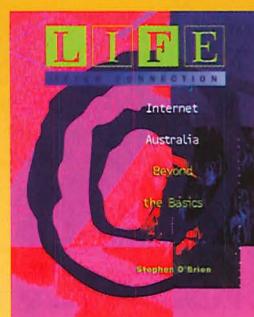
### Making the Most of M.Y.O.B.

*The Basics & Beyond for Australian & New Zealand Users*

Veechi Curtis, Woodslane Press

Written for Australia and New Zealand, this guide provides practical advice about both basic and advanced features of M.Y.O.B. Covering versions 5 and 6, Macintosh and Windows, it is a useful reference for anyone using this accounting package.

\$40 paperback 400 pp



### Life After Connection

*Internet Australia Beyond the Basics*

Stephen O'Brien, Prentice Hall

You've connected to the Internet, you know how to get around it, and you're looking for something a little more challenging. If you're at this point, *Life After Connection* is the book for you. It contains advice about how to use the Internet more effectively as a research tool and as an international communications tool. It also includes listings of online services and 'cool' sites.

\$30 paperback 216 pp

see order form on page 30



## With a little help

I read the first issue of Computer CHOICE last week and it has helped me already.

We recently purchased a brand-name computer from Dick Smith Electronics. After reading A computer for \$2000? I noticed the picture that showed what we should have got with Windows 95.

We got the book and the registration form but not the floppy disk or the two CD-ROMs. I rang Dick Smith and they said the computer company doesn't supply them, so I rang the company, which is now sending the missing items to us. If I had not read your magazine, I would not have known they were missing, so thank you!

It must be nice to know you helped someone with your first magazine. I look forward to reading the next one.

**CJ, Moora, WA**

## Monitor viewing areas

I've just had an interesting experience buying a new PC. I ordered a 15" screen, expecting to get exactly that.



We're subscription-only, so every issue is home delivered!

When my order was delivered, I thought the screen looked a little small, so I took out my trusty tape measure and found it was in fact under 14".

I rang the supplier, who was very helpful and said they get lots of queries about it.

**Chris Schaller, Fairlight, NSW**

We experienced exactly the same problem with the multimedia computers we tested. See A computer by any other name on page 6 and Computer monitors: Is bigger really better? on page 26.



## Subscribe to Computer CHOICE

Send to: Australian Consumers' Association 57 Carrington Road, Marrickville NSW 2204  
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Qty	Price
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\$3 for one item plus \$1.20 for each extra item ordered. Some books may have to be sent separately to keep postage costs down. This is due to Australia Post's vagaries, not ours. Please allow 3 to 4 weeks for delivery.

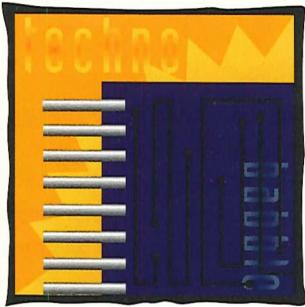
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# technobabble



**Make sense of the jargon used by the computer industry. Here's a guide to some of the words you need to know.**

**BIOS (basic input/output system) /ROM (read only memory):** PCs have what is known as BIOS – a type of ROM that the computer can read information from, but not change in any way. BIOS contains a set of 'house-keeping' instructions that tells your computer what to do when it's switched on. **Macintosh** computers are slightly different in that they too have ROM, but it also contains part of the **operating system**. Also see **memory**.

**Boot (up):** When you first start your computer, you are said to 'boot' it. The boot sector on a **hard disk** or **floppy disk** is where the computer looks first to find information when it's switched on.

**BBS (bulletin board system):** The bulletin board is a computer set up so that people can leave messages for each other, send and receive **shareware**, and sometimes play games. Using a **modem**, you connect your computer to the BBS via the phone line.

**Bps (bits per second):** Used to describe how quickly a piece of computer equipment, such as a **modem**, can transfer information. A 33,600 Bps modem is considered fast.

**Bus:** The circuits inside your computer that look after how information is sent to other parts of the computer. Think of it as a series of roadways on which information travels between the CPU and RAM and other parts of the computer.

**Card:** An electronic circuit board designed to plug into a **slot** inside your computer to improve its ability to do things, such as display graphics.

**CD-ROM (Compact Disk — Read Only Memory):** Similar in appearance to everyday audio CDs, CD-ROMs are designed to store large amounts of computer information, such as programs, pictures, video and sound. Currently, most CD-ROM drives can only read pre-recorded information.

**CPU (central processing unit):** This is the computer's main brain. Pentium 120 and PowerPC 120 are examples of CPUs. The 120 refers to the speed of the CPU in megahertz (MHz). The higher the number, the faster the computer.

**Driver:** Software that tells the computer how to 'talk to' (communicate and work with) an attached device, such as a printer or graphics card. Also referred to as a device driver.

**e-mail:** Electronic mail allows you to send messages to other people or organisations who are on the **Internet** or linked to your computer via a network.

**File:** Used to describe a block of information on a **hard disk** or **floppy disk**. For example, when you save a letter on your hard disk, it is saved as a file.

**Floppy disk:** You've probably come across 3.5 inch disks (the computer industry still talks in inches), commonly referred to as floppies. Floppies store relatively small amounts of information (1.44 Mb), but can be easily carried from one computer to another.

**Hard disk/hard drive:** Information that your computer regularly needs and the **files** that you create are usually stored on the hard disk. Most hard disks are mounted inside the computer and offer much more storage space than **floppy disks**.

**Hardware:** This term refers to actual computer equipment — it's the physical equipment itself, as opposed to computer **software**, the programs.

**IDE and E-IDE (integral drive electronics and enhanced IDE):** A method of connecting hard disks and CD-ROM drives to the computer.

**Internet:** The Internet is an international network of millions of university, government, commercial and private computers. There is no central point that controls the Internet, such as a central server.

so if one computer breaks down, the remaining ones can still link up.

**ISA (industry standard architecture):** An older bus standard that evolved from the bus used in the original IBM PC.

**Macintosh (Mac):** A computer manufactured by Apple. These computers are not usually IBM-compatible.

**Memory:** There are many different types of memory in your computer, including **RAM** and **ROM**.

The storage space of these devices is measured in kilo-bytes (kb), megabytes (Mb) and gigabytes (Gb). 1024 kb = 1 Mb; 1024 Mb = 1 Gb.

**Modem:** A device which connects a computer to a phone line and allows it to communicate with other computers. The speed at which a modem transfers information is measured in **Bps**.

**Monitor:** Similar to a television in appearance, the monitor allows you to see what you're doing.

**Motherboard:** This is the main electronic circuit board inside your computer. The **CPU**, **RAM** and **BIOS/ROM** are on this board.

**Multimedia:** Used in the computer industry to refer to **software** and **hardware** that uses a combination of text, still pictures, video, animation and sound.

**Network:** A number of computers and other devices, such as printers, linked together so that they can communicate. This makes it easy to transfer information between each computer, and for several computers to share a printer.

**Operating system:** The set of instructions which tells your computer how to operate, and makes sure the different parts of the computer work together. Examples include Microsoft Windows 95 and Mac OS.

**PC (personal computer):** Used widely by the computer industry to refer to IBM-compatible computers. It is considered the computer industry's de facto standard.

**PCI (peripheral component interconnect):** A bus system used in many current PCs.

**Ports:** Found on the back of most computers, ports are sockets that allow you to connect other devices, such as printers and **modems**, to your computer.

**RAM (random access memory):** This is your computer's short-term memory. Anything in RAM is lost when you switch off your computer. The **CPU** looks at and changes **software** and **files** it has brought into RAM when carrying out a task. Its size is measured in Mb. Also see **memory**.

**SCSI (small computer system interface):** A type of port, used widely in the Macintosh world, to connect hard disks, CD-ROM drives and scanners to the computer.

**Slots (or expansion slots):** These are connectors located on your computer's **motherboard**, and allow you to add extra circuit boards or **cards** to your computer to add to its capabilities.

**Shareware:** **Software** that is offered to users on a trial basis, on the condition that if it is regularly used, a payment is sent to the authors. It is distributed via the **Internet**, **BBSs** and shareware companies.

**SIMM (single in-line memory modules):** A type of RAM.

**Software:** In order for your computer to be able to do anything, it needs a series of instructions — this is called a program, or software. It is usually distributed on **floppy disk** or **CD-ROM**.

**VGA (video graphics array) and Super VGA:** A screen-display standard used by most PCs that allows them to display colour images on a computer screen.

**Write-protect:** In order to stop information being deleted or copied over, there is a small square sliding tab in the corner of 3.5 inch **floppy disks**. When the tab is open, the computer can only read information from the floppy disk, and not write to it.

**WWW (World Wide Web):** Developed to make the **Internet** easier to use, Web pages combine text with graphics, and even sound. By selecting keywords or graphics with your mouse, you can move to other Web pages.

If you've got a computer-related question, write to: Computer CHOICE, 57 Carrington Road, Marrickville 2204. Alternatively, e-mail your problems to ausconsumer@choice.com.au

## Computer advertising

I intend to buy a computer in the next couple of months and I'm looking at all the options. Could you answer the following questions?

- What is EDO RAM?
- Is a computer with an IBM 150 CPU faster than a computer with an Intel Pentium 150, or is it the same?

**William Stanley, South Oakleigh, Victoria**

EDO RAM stands for Extended Data Out Random Access Memory. RAM is your computer's short-term working area. EDO RAM is simply a faster type of memory, which should make your computer perform better.

However, while this sounds good in theory, in practice the increase in speed that EDO RAM provides is barely measurable. EDO RAM is only worth getting if it is offered at little or no extra cost.

In the original ad you sent us, the CPU is referred to as an IBM P150. This means the chip has a P rating of 150 and that it is equivalent to an Intel Pentium operating at 150 MHz. For more information about EDO RAM, the P rating and the speed of different CPUs, check out our Mini test on page 23.

## Obsolescence problems

Some years ago I set myself up with a Commodore 64, Commodore 1541 disk drive, Commodore 1801 colour monitor and Commodore OPS1101 daisywheel printer. I enjoyed learning and using the computer for a few years until the disk drive refused to function correctly.

Inquiries regarding its repair resulted in the advice that "technology has passed you by and nobody is interested in repairing 1541 disk drives now; in fact your whole set-up is obsolete and you need to update".

Is there any way I can update and still use some of the equipment, at least the colour monitor?

**MJ McNeill, Angourie, NSW**

It's a fact of life that computers date quickly: a brand-new computer will be regarded as

technically obsolete within 12 months, even though it may continue to function for many years.

The Commodore 64 originally came out in 1983. There have been huge advances in computer design during the past 13 years. You'd probably find that many of the things you use your Commodore 64 for can be done much more easily on a more recent computer.

It would be very difficult to use any of your Commodore 64's attachments with a modern computer. The monitor is designed to accept the Commodore 64's video signal, which is very different from the video signals produced by today's PCs.

On the other hand, if you're really happy with your computer, there's no real 'need' to upgrade. As far as getting your disk drive fixed, we were able to track down someone who said he could repair it. However, a more practical option might be to put an ad in a local or trading paper and offer \$20 for a secondhand disk drive.

## Interference

My 486 DX33 PC at home causes interference with our radio and with ABC channel two TV (no problem on other TV channels). The supplier of my PC is unable to offer a solution. Is there any way I can shield the radio and TV or, for that matter, the computer?

I've tried moving the PC into different rooms of the house, but nothing seems to work. Is this a common problem with 33 MHz machines or is there a solution?

**Stuart Huish, West Melton, Victoria**

We asked the Radiocommunications Standards Team at the Spectrum Management Agency what they thought might be causing the problem. Their response:

"Because the computer affects one channel, the ABC, the problem is likely to be radiated emissions into the antenna of the TV. This is because the ABC frequency (64.25 MHz vision carrier) is close to the second harmonic generated by the 33 MHz computer clock. These same harmonics could also affect FM radio."

Some possible solutions include:

- Have an outdoor television antenna installed if you currently have an indoor one. Make sure the outdoor antenna is located as far away from the computer as possible.
- If the computer has a plastic case, have it put into a steel one, which will provide better shielding.

As of January 1, 1997, all new electrical and electronic equipment will have to comply with new standards designed to reduce electromagnetic interference.

Until recently, Mr.

McNeill was still using his Commodore 64.

